I’d like to welcome all of you here today for this live surgical webcast. My name is David Debore. We’re here at St. Thomas Hospital in Nashville, Tennessee. And I’d like to start by just discussing a few of the features of the Evolution Knee System.

One of the important aspects of the advanced medial pivot knee is the knee kinematics. And that knee kinematic relies significantly on the stability of the medial side of the knee. When we look at the normal knee there are many structures that provide static and dynamic stability. Just to name a few, the knee capsule, obviously the musculature around the knee, the collateral ligaments, we’re learning about the ACL and PCL as providing just restraint at the ends of anterior and posterior translation, several things that we’ve done in our kinematic lab to define which structures are providing this stability. Also, the menisci are critical in knee stability, as well as the shape of the femoral condyle and the tibial plateau.

What we found in our research is that the conformity of the medial side really dictates the motion of the knee or the stability of the knee. When we look at the function of the structures around the knee, obviously the lateral side of the tibia is more convex, as opposed to the medial side which is concave. Thus, the lateral side and the lateral tibial plateau, as well as the lateral menisci, provides an environment that allows greater movement or translation than on the medial side of the knee.

What we did with the Evolution Knee was to try to take the features from the advanced medial pivot knee that we thought were very important and then improve on the design slightly, and I’ll go into that in a minute. But essentially give that same medial ball and socket stability, as well as allowing the lateral side of the knee to have less conformity to allow more translation. We feel like the design will provide a more normal kinematic of the knee similar to the advanced medial pivot.

When we did our cadaver testing with the Evolution Knee we tested three different types of inserts, and they’re shown here. The cruciate-substituting design, which is the classic medial pivot design, it’s actually the second generation of the medial pivot design, and it is designed to be used with sacrificing the posterior cruciate ligament.

There is a cruciate-retaining design similar to the double high with the advanced medial pivot. It’s a PCL-sparing insert, but it also substitutes for the ACL due to the large posterior lip. Again, with the same type of kinematic, where the medial side is more constrained and the lateral side allows more movement or anterior/posterior translation.

And then there’s the posterior-stabilized knee, which is the classic PS knee. And it is also designed with the conformities on the medial side to give the same medial pivot kinematic that we see, but also having the post engage it about 80-degrees of flexion for those situations where there may be a little flexion extension mismatch, where you have a slightly greater flexion gap. In that situation the posterior-stabilized design is an ideal insert for providing that posterior stability to the knee.
The other important part of the Evolution design, there’s two things I wanted to comment; one is the implant grows from the central post. This is different than the advanced medial pivot where the implant would grow posteriorly. The anterior dimension would remain the same, but it would grow posteriorly. So when you put your cutting blocks on the distal femur, your four-in-one block, the dimension between the post and the anterior cut always remained the same with the medial pivot. This is not the case with the Evolution Knee. The Evolution Knee grows from the central post, so if you switch from a size five to a size four implant, if that’s a three-millimeter decrease in anterior/posterior dimension, a millimeter-and-a-half comes off the anterior cut and a millimeter-and-a-half comes off the posterior cut, so it grows centrally.

The other issue is the sizing of the component. Clearly one of the shortcomings of the advanced knee was in the larger sizes we tended to get more overhang of the implant in some patients. That was the genesis for the stature component on the advanced medial pivot knee. What we did when we went to the lab to the anatomic study was look at a large number of CT scans and look at the dimension, the aspect ratio, and although there’s not one common actual aspect ratio per se, what we were able to do is look at confidence intervals and say if we sized the implant in the medial/lateral anterior/posterior dimension, would we be able to get in the high 90-percentile confidence interval and allow most patients to fit within the sizing of our implant system. To this end, we obviously needed more than six implants on the femoral side, with smaller increments between sizes, and that was done.

On the tibia side, the same study was conducted. We essentially took anatomic sizing from CT scan data and then we actually, in the operating room, used lollipops of DTMs of the components to compare which sizes would actually work during surgery. I was part of that study. You can see on this slide the DTM, which is in white, for a size three component. We then assessed coverage. What we wanted was we wanted as full a coverage we could get without overhang. And I think we’ve achieved this in the Evolution Knee System.

So now we’re getting into the instrumentation part of the Evolution Knee. One of our goals was to allow the knee surgery to be done in a less invasive technique. Clearly the tibial insert locking mechanism was necessary with the medial pivot knee, but it was a difficult dovetail to get in. I’m sure many of you all, if you’re medial pivot knee users, that you’ve experienced that. With the new system we were able to adjust the design of the tibial base plate to allow insertion of the tibial insert at an off-access angle at eight-degrees relative to the neutral access of the tibia. By allowing this, this allows a much easier insertion of our tibial insert. I think you all will get a chance to look at that. You will find that this was a significant improvement. And at the same time, we were able to maintain that same locking mechanism and the same tolerance as necessary to reduce backside wear.

The last thing, along with the instrumentation, which should be lower profile, a little sleeker than with advanced medial pivot, also the keel on the tibia is slightly undersized now compared to the old keel, which allows for a smaller incision, less space for insertion. So all of these things were done with the concept of minimally invasive surgery, which we hope will lead to a speedier recovery for our patients. And now we’re ready to go to the live portion of the webcast. I hope you all find this informative. Please feel free to send in any questions that you have during the surgery. Thank you.

Before we get started, I just want to introduce our surgical team. This is Yoshika Baker [PH], she’s from Beach Bluff, Tennessee; Matt Lowe [PH] who’s from Owensborough, Kentucky; and Paul Griffin [PH], originally from Michigan, now calls Nashville home. And they’ve all worked with me for a long time.

So how old is our patient? 58. She’s 58 years old. She’s actually had a right knee replacement performed a little over a year ago, I think. And she’s got an advanced medial pivot knee on that side. We’re going to do the exact same thing, just with the Evolution Knee System on this side.
Not a great deal of deformity in her knee. We'll get you a look at her x-ray in just a second. So I'm going to go ahead and start.

We're going to make an anterior approach to the knee. I'm a distal cut first, guys, so distal femoral cut. We'll size our femur, make our femoral cuts using the four-in-one blocks, then the tibia, and balance the knee, and then the patella. So that will be the order.

One thing, as we were designing the Evolution Knee System, we really wanted to keep most of the aspects of the advanced knee, and just improve upon a few of the shortcomings. And some of those shortcomings were really related to just the time when that knee was designed, you know, that was over 13 years ago. There wasn't a lot of discussion about less-invasive procedures. So the instruments were different, which we tried to improve upon. And then the – I'll take a beaver blade – and then the sizing of the components, there were six sizes on the advanced knee, and, clearly, some of the larger sizes were big, and that's why they came up with the stature system. But I think what you're going to find on the Evolution is that it really addresses the sizing issue.

There was a nice study done, a cadaver study, looking at sizing, and I think the company did a good job as far as getting that worked out. So the sizing is the one big issue. You can mismatch the femoral component and the tibial component. With the advanced system, if you put a size three femur in, you had to put a three or a three-plus tibia, whereas, on this system, you can go up one size and down one size.

Also, I think you're going to find that the locking mechanism is a little bit easier. It still maintains the same locking integrity, but it's just a little easier insertion on that dovetail. I don't know why she’s -- let's see. There we go. I'm going to take just a little bit of this fat pad right here. Yeah. All right, you can come up and let's go in. Boy, she's just got a very minimal amount of arthritis on the inside here. Let me see the Bovie a second. Okay. Let's see a poker.

So I'm going to go ahead and take both the ACL and the PCL. In this system you can actually use three different inserts with this system. You could use a standard cruciate-retaining knee. Let me see the Bovie. You could use a cruciate-substituting knee, or you can use a – which would be the medial pivot – or we could use the posterior stabilized knee, which has the standard post. Okay. So we're going to go ahead and get that. There you go. Let's see the drill.

Now, I make a vent hole in the distal femur in order to reduce the pressure in the canal and hopefully reduce the risk of fat emboli syndrome. So we're going to use the intramedullary rod. It's still a – it's a ten-degree distal resection, which is different than the medial – advanced medial pivot, which is a nine-millimeter or, excuse me, it's a ten-millimeter resection versus a nine-millimeter resection. I've set my guide at a five-degree valgus angle for a left knee. There we go. And then let's just take the extra pin. That's pretty good right there. Okay. Right here. Let's see the saw, Yoshika. All right. There we go.

Then the next step is I like to check my cuts to make sure both condyles ended up the same, and they are and it looks good. So our cuts were what?

(INAUDIBLE)

Okay. Next, we're going to size the knee. I'm going to take cartilage off both sides here. And get the marking pen. I'm going to go ahead and mark the epicondylar axis. We're going to note the posterior tibial – I mean posterior femoral condylar axis, and then the AP axis of Whiteside. And I tend to balance more using Whiteside's line than any of the others, but I still want to know kind of where they all end up.

So here's our sizing guide. The numbers are listed here in the center of the guide. Yeah. It looks like it's between a three and a four. I think it's going to be a three. And the crosshairs that
are used here to help us align, looking directly through at our marking on our epicondylar and AP axis of the knee with the crosshair there. I don’t know if that – can we see that? Let me see the (INAUDIBLE). So here’s the crosshair. That’s our anterior line. Okay. That looks pretty good. All right.

Let me go ahead and just – I’m going to drill it, Yoshika, and then I’m going to stick the size three and four up here and make a final decision. So I’m going to go three-degrees external. There we go. Okay. Is this a size three? So if I look at this knee, it clearly looks closer to a three on that medial/lateral dimension. We’re a little closer to a four than we are a three on the anterior/posterior dimension, but I think this is going to be fine, and I’m going to stick with the three.

So here’s the four-in-one cutting block. And I’m going to just impact this. And this cutting block allows for the – it allows us to take our anterior cut and either make our cut two millimeters more anterior or two millimeters more posterior. So we’ve four millimeters from which to kind of play with if we want to adjust our anterior cut. We look pretty good right here. What I think I’m going to do is take that at the zero position. That’s what I think I’m going to do. Okay.

Now the other thing I want to do is make sure that my – our posterior medial resection on a size three is going to be – is it ten-millimeters, yeah. So ten-millimeters on the posterior medial, I’ve got a 12-millimeter. I at least want to take 11-millimeters off this posterior medial side, and 12 would be acceptable. And it looks like we’re probably going to be about 11. So that all looks just about right as far as gap spacing. All right. Let’s see the drill. So now I’m going to go ahead and pin this. Here we go. Does that look good? Yeah. Yes.

One of the questions was, “It looks like the cutting block, the four-in-one block, is about the same width as the implant.” And the answer is yes. The width of this cutting block actually matches the width of the actual implant. So a size three cutting block, from this dimension to that dimension, it’s pretty easy to see here on the block, matches nicely the size of the implant. Yoshika, let’s see the narrow blade. I’m going to be pretty close to notching. Okay. Let’s put this narrower blade on. No, the small blade. It’s going to be close here. That looks good. It looks like I’m going to come out right at the border here. Yeah. Knife. That looks good.

So we’ve got a nice blend here on this lateral side, and I think that looks good. So obviously I cheated as far posterior as I could get because I was in between implant sizes in order to keep my flexion gap from being too large. There we go. All right. Let’s see what that – did we get the lateral side out? Yeah. Good. So we got the medial and lateral side. I want to just show you this medial side. So it’s a pretty healthy chunk of bone. I don’t know – let’s see the measurement here. We’re right at about ten in terms of our measurement, maybe nine-and-a-half. So with the saw blade thickness, I think we’re just about right. That should be close to an 11-millimeter cut.

So I’m happy with our sizing and our cuts, so I’m going go ahead and make our chamfer cuts. These are new cutting blocks and they’re pretty tight. Did I get that? Yeah, I believe we did, Matt. Here we go. Okay. All right, so that’s a four-in-one block, and now we’re going to take a look at that and then we’ll cut our tibia. Let’s see the Rongeur. Yeah. So that looks like we’ve matched the axis pretty nicely. It looks pretty good to me. Okay. Poker.

I’ll finish the meniscal resection here. I’ve got a little bit left on the medial side. There we go. Okay. Let’s see the – put that in, Paul. Let’s see the Bovie. All right. So there we’ve got – I’ve removed some of the capsule around the proximal tibia in order to allow us to – is that good enough there? Take a little more of the deep MCL now. That’s good. Okay. All right.

Now we’ve got the tibial cutting guide, and what I’m going to do on the tibia is I just mimic a patient’s native posterior slope of the tibia. So I’m going to put this in at the ACL origin. That looks good, Matt, so go ahead and, yeah, come on down. And then I’m going to put a – go down
a little further, Matt, a little further. That’s good right there. So I’m going to be able to adjust this slope. I think I’m pretty close.

So I’m just looking at the patient’s native slope. It looks like we’ve got that matched pretty nicely. And then I pin it right where the slope – matching the patient’s native slope. Then the next step is to set our varus valgus angle, and I usually base that at the plafond and look about the second toe. I think we’re pretty close on this right there. Now is that all the way down, Matt? Let’s just make sure we’re all the way. There we go. We’re down now.

And now we’ve got to make a measurement. There’s a stylus. We’re going to go off of the high side, so we’ll take ten off the high side here. So if we’re sitting – that’s the ten stylus, correct? Yeah. There we go. That’s ten off the high side right there. There we go. So now I’m just going to take this down until it’s touching. That looks pretty close to me. Okay. Good. Let me just measure this myself. Okay. I think that’s about right. All right, let’s go ahead and drill that.

Now since she’s so little and -- I don’t know, that’s not -- I think I’m going to leave that one off. All right. Let’s see. She’s got a pretty tiny tibia. Let’s see a poker and a knife. Okay. I think that’s going to be okay right there. Let’s take a -- yeah, we’re a little tight. There’s a reflectional synovium that I did not take down the patellar femoral ligament. I got it now. There we go. So that wasn’t really a lateral release. That was just the – now here’s the extension guide. Yeah, I’m tight in both flexion and extension just by about a millimeter, so I will go back to that plus-two. I thought about it and should have done it. Okay. Take the two pins and then we’ll take the tibial cutting block again, and we’ll go right back to the plus-two position and go from there. Okay. I think that’s pretty good. All right.

So when I – as I mention, when I cut my slope, I usually match the patient’s native slope. If you’re an intermedullary user you’re going to get about three-degrees of slope, so if you – relative to the keel or the IM part of the tibia. Let’s see if that does it. Yeah, that’s going to be better. Yeah. That looks pretty good. So now we’re at 90. We’re pretty nice here if I’m sitting down properly. That looks good. Let’s see the extension guide. Let’s see.

All right. So with the extension guide, ten-millimeters for extension. There we go. Perfect. All right. And now we’ll look at our overall limb alignment. So I want this on the thermo side to point just to the medial – or the lateral side of the femoral head, somewhere in the medial side of the neck, which I think it probably does. Obviously I can’t see it without an x-ray. And then we’re neutral on our tibia. So I think our flexion and extension gaps balance nicely, putting varus and valgus stress we’re tight here. So I think the overall alignment looks really good. Okay. So I’m happy with that. I’m happy with my sizing on the femur. I’ve got – let’s see the Bovie. I’ve got just a little edge right here that I didn’t get next to this. There we go. So now we’re ready to – actually, Paul, let’s go ahead and we’re going to size the femur. Let’s impact this. Yeah.

Now on this, we have the ability to translate this. Are we a little bit flexed? Yeah. Okay. So that’s -- I’m just slightly flexed, and it’s pretty close actually. So now I’m going to drill for my lugs. We can actually put the lugs in if we want, which we will. There we go. Got it. Okay. I don’t
necessarily have to drill the lugs, but I did it today. I think there's some guys out there that are actually just pounding the lugs in.

So now I'm going to make this resection here for the trochlea, and basically it's just a couple of quick little saws. Let's see here, Matt. Let me get right there. That's good. I think that will be good. Let's see if this fits. If it doesn't – yeah, that looks good. Okay. So that looks pretty good. Let's see the tibial. All right, Paul, let's see. It's a size ten. Okay. So we're nicely straight. Let's see what the patella does.

At this point, I always like to look at my patella tracking with the native patella, kind of get an idea of how it's tracking and the orientation of the tibia. I think that looks pretty good. Okay. Let's see. I think what we'll do, Yoshika, is while we're mixing cement, I'm going to take that four-in-one block and just make sure everything is just in the right spot. I think – I think I still have a little bit of anterior cortex to take off. All right.

So this measures 20. Our thickness of our 32 patella is eight; so that means I go down to 12, and I'm probably going to stay to the high side of 12. I don't want to go any thinner than 12 because of the risk of fracture. So I'm going to – I don't want to overstuff the patella, but I don't want to over-resect as well.

This is the haircut method of removing bone. You can always take a little bit more. There we go. All right. Let's check the thickness on that. So I'm down to about 13-and-a-half. Yeah. All right. So I'm pretty close. I'm just going to – I'm a little thin on the lateral side and a little high on the medial side, so I'm just going to correct that and we should be good. There, I like that. All right.. Let's see that 32. That looks great. So she's pretty tiny. I'll tell you, 32 is every bit of what she needs. All right. Let's see if we got it all. All right.

So now what I like to do at this situation is let the tibia kind of free-float and let it rotate to a position where it wants to be. It's usually different, obviously, in flexion and extension, but I'll find that position and then we'll mark that; I'll look at it, it looks like we're about the medial third of the tubercle, so I'm going to go ahead and mark that. And I don't want to drastically change the orientation of the foot, but that looks like it's pretty good to me. And I'm not holding the patella, and it's tracking without tilting, so I like that. All right.

I think what we'll do now is just take one last look at the – I like the tibia, we're going to take one last look at the femur and make sure we're down. We're just slightly tighter all the way around than I want. All right. So the issue about resurfacing the patella, I tend to be a guy that will resurface the patella. I think that if you look across the country, there's probably somewhere, depends on who you read, between – let's see the four-in-one block – somewhere in the 15-20% range of guys that don't resurface the patella. You don't have to do that with this system. It allows for the trochlear – design allows for non-resurfaced patella. In fact, you know, one of the issues is there's a lot of movement now towards – let's see, did I move that – there's a little bit of a movement towards press fit implants, especially in younger patients.

I've got one guys that was a – let me make sure I got that in the same spot – that is a marathon runner. He's still running some on his knees, so I actually put a press fit knee in him and also an unresurfaced patella, so that would be the person I would put that – or unresurface the patella on. I pretty much do it 100% of the time. However, if you don't patella, you don't necessarily have to with the new system. There we go. Yeah. Yeah. I think that's got that.

So if you guys, anybody that's got questions, feel free to send them in. We may not get to them today, but we'll definitely get to them and get to your rep as things go forward in the future. All right. That looks good. Okay. So I think I improved that. Let's see if that femur fits a little better. Okay. So we'll go right back in the same position. Mallet. Did that fit a little better? Yeah, I think so, Matt. Maybe. I think I made a -- yeah. Yep.
So we did have a question about what’s the – I think I’ve got this right. The question was, “What’s the purpose of the little cap on the femoral implant?” That’s so that you can test, number one, make sure it seats down properly, but number two, to test the range of motion with the patella in place. That’s okay, buddy. All right. Okay. So we’re – I think we’re ready to mix. We’ve got to prepare the tibia now.

So I’ve marked my rotation. I’m checking over the top here to make sure I don’t have any overhang in that posterior lateral corner, which we’re good. If we did overhang there, then I would – I could go down to a smaller component. We’re at a size three femur. Let me see the size two tibia, just to show what that would look like. You got the size two tibia? Two left?

So this actually fits almost perfectly, really just, if you look at it. But if we put the size two, we can put the size two on there and you can get a hint that it’s undersized here. So if you’re looking from the top down, we’re clearly undersized posteriorly all the way around. So I’m going to go with the size three, Chris. There we go. All right. Let’s go this way, Matt. Okay. That’s good.

One of the – just another question that came in, the question was, the fit on the anatomic tibial base, I think there’s no question about it, it’s a better fit. You know, we were part of the sizing study, and when we put different sized lollipops as we were just measuring coverage and fit, the asymmetric base plate was by far the lowest profile, caused the least overhang, and results in impingement. And so it’s an inventory issue. And I’m just thankful that Bright Medical decided to go forward with asymmetric base plates, and essentially doubled their inventory, but it was the right thing to do for coverage.

So now we’re prepared, and I’m just going to get things ready for cementing. We’re just going to plug this hole. There we go, Matt. So we make a little bone plug just to kind of sit over the end of it. That looks pretty good. Okay. How’s our cement doing?

So going back to the points on the system that I thought were important; number one, one of the things that we liked about the advanced medial pivot knee was the knee kinematics. Obviously, we’ve done a lot of work in the lab trying to mimic normal knee kinematics. Work that’s been done by Rick Komistack’s [PH] group where they looked at contact points between the medial femoral condyle and the medial plateau and the lateral femoral condyle and tibial plateau, and they’ve pretty much shown that obviously we all realize that the medial side is almost a ball and socket. It’s more constrained than the lateral side.

You know the medial tibia has a concave surface, where the lateral side is more convex, and thus, in the kinetic studies, the lateral side has a lot more excursion or less constraint, so it’s allowed to move over a wider area. So it makes sense in knee design to design a knee that has that same capability or same kinematic, and that’s what brought me – that’s what sparked my interest with the medial pivot knee was that kinematic. In those young patients that I’m trying to replicate normal knee kinematics, I think the medial pivot does it better than any knee out there.

So I wanted to make sure as we went forward that we kept that same kinematic but yet improved on the system. And the improvements were there’s more sizing. On the femoral side, there’s eight implants versus six, so there’s less steps between sizes. You can up-size and down-size between the femur and the tibia; the asymmetric base plate, the improved locking mechanism on the tibial base plate, it’s easier to insert at the time of surgery. All of these things, I think, were improvements. And then improvements in instrumentation; and clearly the instruments for the medial pivot were designed 13 years ago, so things were different then, and the instruments are smaller, a little more precise, so that improvement also, I think, is a big plus.

But at the same time, we’ve been in the lab looking at the kinematics, and clearly the open chain kinematics, there’s no difference between the medial pivot or Evolution, so we’re getting the exact same knee kinematic. We’re starting to get our arms around the closed-chain model where we have the cadavers now doing the squats and the lunges and trying to compare that to normal and
compare the two knee systems. But I'm really pleased with the kinematic work that we've got done in the lab. And I would encourage anybody to get with your rep and take a day, if you can, and go see the work that's being done down in Memphis in the kinematic lab. I think you'll be impressed.

So the kinematic looks the same, and if we do that and get all the improvements that we're hoping for with Evolution, it should be a significantly better knee system and still retaining the same lineage or line of knee kinematics. The question we just got, it's coming in my ear, but it's from the audience, was, "Do you have to sacrifice the PCL?" And my answer to that is I do every time. It's just what I do. Now I know there are a lot of surgeons out there that like to save the posterior cruciate ligament. If you do that, there is a cruciate-retaining insert; the preparation and everything is identical, just the insert is a cruciate-retaining insert.

In this patient I'm going to put a medial pivot knee, which is a substituting design of the PCL, and then we've got the posterior stabilized design, which is the standard post. I like the post. When I do knee replacement, I think that – in fact, I know that the rehab is a little harder with the medial pivot knee in terms of that initial rehab. If we look at manipulation, my manipulation rate, or even others with the medial pivot versus the posterior stabilized knee, my manipulation rate and the medial pivot is probably close to what I would have in a uni knee, maybe two to three percent manipulation rate, whereas, in the posterior stabilized design, we may manipulate one patient every six months or a year or so.

So it's a – I tend to use the posterior stabilized knee in the elderly patient that is a little lower demand, not wanting the same functional capabilities that a younger patient would want, and then I think that also makes their rehab a little easier. That looks good. That sitting down nicely, Matt. (INAUDIBLE).

Yeah. Okay. I've got tough critics here with me. That looks good. Okay. Let's see the trial insert. Also, the trial inserts, I think, fit in here much nice than the advanced knee. But there we go. We're out all the way straight, and that's nice and stable. Okay. I'm sure that the guys that are press-fitters would be done with the case by now, and they'd probably all be getting their coffee. But if I knew how to – I think the issues that we used to see with press-fit knees with tibial loosening, I think with the newer materials like Biofoam and some of the more rapid in-growth materials, I think that what we're going to end up seeing is similar results to cemented knees. And I'm not sure it's going to go exactly the same way as the hip, but I think there probably will be a resurgence of press-fit knees, especially in younger patients. I guess the question is is what's going to last longer, the poly or the implant, and cement bone interface. And clearly, as our poly gets better, we want longer, more longevity on the implant interfaces. All right. Let's see.

What else are we – anything else I need to mention here? Oh, I've got the – now, one thing that – obviously, we've got this femoral component, I think, fairly extended. I mean I think we're right in line with that anterior cortex of the femur. If this knee were flexed, even up to seven-and-a-half-degrees of flexion, the system is designed to accommodate that much flexion without impingement of the component, of the poly on the femur. So, you know, as you're looking at your post-op X-rays, if your implant is slightly flexed, that's not a problem. That looks good.

The four-in-one block, what I have found, and you saw me, we actually ended up re-cutting the femur, when you put the – the question was, is the four-in-one block stable? When you put the block back on and re-pin the block with the headed pins, that block is on solid. And I think that's one of those tactile things that I think you just have to try it and feel it and see what you think. But I think you're going to feel that those cutting blocks go on very solid.

You know, in terms of saw blades, everybody's – there was a question about, which saw blade do we use? I'm going to defer that to your rep. I tend to like the wider blade for making my anterior
cuts, but you clearly have to use the narrower saw blade if you’re using captured blocks posteriorly and for your chamfer cuts.

There was a question, what’s the recommended tibial slope? I think it talked a little bit about that, but, I usually – the implant comes in – it’s three-degrees slope relative to the keel. So if your intramedullary – use the intramedullary tibial cutting guide, what you’re going to notice is you get three-degrees. If you use the extramedullary guide, like myself, then basically you’re going to match the slope wherever you want to put the tibial base, and then the keel will just punch wherever it goes three-degrees relative to that. Let’s see. What was the question?

(INAUDIBLE).

Is it hard to load the medialized locking mechanism? No. So one of the things that they did to help with the tibial insert is they angled the insertion slightly medial, and so as you engage, it engages from the medial side, which really helps the ease of getting our tibial insert locked in. And so the question was, is that hard to load when you put in? And the answer is, you know, you’ll be the judge of that, but I think it’s easy. I think it’ll be something that's unique and I think it will – you’ll find that it really does make putting the tibial insert in much easier.

So does that show on the trial? Bring a trial tibial base plate with how that works. And you got a – well, actually it doesn’t show here, but basically the insertion, instead of being directly 90-degrees – I don’t remember the number, is it 15? Eight-degrees. I’m sorry. It’s eight-degrees medial, so it just – so basically, instead of being 90-degrees, you get an eight-degree medial orientation for the locking mechanism, which then allows it to engage and capture under the dovetail or under this detail here posteriorly. So you’re completely covered posterior, and that’s what gives the locking mechanism it’s strength.

So I’ll be curious to see what people think about that. I think you’re going to find that it is so much easier to put this tibial insert in compared to the advanced. I think it will be a welcome change. And obviously, you know, in any knee system, if the locking mechanism of the tibial polyethylene is key when you are a highly constrained component. So if you look at historically, you know, when we had flat on flat surfaces back in the ’80s, you didn’t need much of a locking mechanism between the tibial polyethylene and the tibial base plate because all the motion was free to move up on the top surface.

When we got more constrained device, so we wanted to go away from that line-on-line articulation between the femoral condyle and the polyethylene, as we increase that surface area, that transmitted those loads to the locking mechanism of the polyethylene insert, and that's where we saw all of the issues with backside wear. So in the ’90s, we were talking about backside wear, even in the 2000s. And the reason the medial pivot knee avoided that was they had probably the best locking mechanism on the market, and you had two dovetails on each side of the polyethylene that had to engage at the same time. But once you got it in, you were rock solid. Well, it made it difficult to – not yet, it’s not ready – it made it difficult to put the poly in, but it did save the patient from the issues of backside wear.

Well we still have the same issues. So the way we handled that is we’ve got just a slightly different locking detail, but we also change the orientation to that eight-degrees medial, and I think that was a genius move. It wasn’t my move, so I’m not talking about myself, but I just think it was a good idea. And I think that the data that we’ve seen from the lab with the testing looks great. So I think it’s going to be a significant added improvement. I hope that was clear. That’s a little bit of a hard concept to kind of just talk about without having a diagram. So are we pretty well set up?

(INAUDIBLE).
Okay. All right. You can come off, Paul. All right. So we’re looking at – this is the ten? I think a ten insert, Chris. So if you look here, I’m just going to show you. So we’re out to full extension. We’re not hyperextending. We’re out to full extension, if we can see that. Can we show that? Full extension, we’re nicely flexed. And I don’t know if it shows, but our patella is tracking right in the midline, no tilting, and I’m real pleased with that. So the mechanics of the patella, I don’t know if that shows on the screen quite like it shows here, but it’s good. Okay. So let’s let our tourniquet down. Let’s take the poly – or let’s get the trial insert out, Yoshika. Oh, here it is. All right. All right. Let’s take this.

All right. Dr. Price, our fellow, just walked in the room. Any questions, Matt? Any comments? I’m sure Matt’s going to like the improvement in the locking mechanism, the ease of insertion. There we go. I think the rest of that looks pretty good, Matt. I’m good with that. Okay. Let’s see the –

(YNAUDIBLE).

Yeah, that’s it. Let me get underneath this condyle and see if I got all that. That looks good. This is actually a little bit of bone. Rongeur. You get it? There we go. Okay. All righty. Let’s see the – I’m going to put a little Marcaine in the back of this knee also. So we use a thermal nerve block mainly for postoperative pain control. We use a multimodal pain management. We don’t use PCAs anymore. I don’t use drains. We stopped that, I guess, about three years ago. Subcuticular stitch, we use all-absorbable interrupted Vicryl sutures. DVT prophylaxis; we’re still using Coumadin for about ten days, and then we switch to an aspirin.

That looks pretty good. So this is that little – I’m just trying to inject this posterior capsule with a little Marcaine. There we go. All right. So this is the detail. This is that – if you look at this, so this would be 90-degrees, and then this is the eight-degrees; so you see a little bit of the change in detail. We’ve got lots of exposure. The patella is out of the way. I did a little wider exposure than normal. But if you were doing a mini incision, this should be much easier. And so I’m just going to tap this back in, and we’re down, so. All right. Let’s get this leg up. Okay. We’ll wash it out and close it up.

I thank you guys for being here today. I’d like to thank Yoshika, Matt, and Paul, and everybody here, also St. Thomas Hospital for letting us do this at their facility. And if you have any of the questions that we didn’t get to today, you guys feel free to have your rep send them in, email them, and we’ll get them all answered.