

Taperloc[®] Microplasty[™]
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Welcome to this “OR-Live” webcast presentation, live from Mount Carmel New Albany Surgical Hospital in New Albany Ohio, and brought to you by Biomet Orthopedics. In just a few moments, you’ll be able to join Doctors Keith Berend and Roger Emerson as they explore the benefits of the Taperloc Microplasty stem and E-poly antioxidant-infused technology during a hip replacement through the anterior supine intramuscular approach. “OR-Live,” the vision of improving health.

Good evening and welcome to tonight’s webcast. We are here at the New Albany Surgical Hospital outside of Columbus Ohio, and you are going to watch Dr. Keith Berend perform an anterior approach total hip replacement with the patient on a regular OR table supine. My name is Dr. Roger Emerson from Plano, Texas, and I will be moderating this webcast. I will ask Dr. Berend questions, and we can also respond to your questions that you send in by e-mail. The e-mail button is at the bottom of your screen where it says, “Ask a question.”

Since you have tuned into this webcast, you have an interest in this procedure. I have used this approach myself since 2005, and currently use it for most of my primary and even some revision hip procedures. I would like to acknowledge the help and inspiration of Dr. Eric Dewitt, from Belgium, who helped me learn this surgical approach. This is a previously described surgical approach, which has not been commonly used in this country, but which is enjoying renewed interest at this time due to several advantages that it brings. The approach that is performed now is commonly attributed to the Jeu de brothers, Robert and John, who practiced orthopedic surgery in France in the ‘60s and ‘70s, but there are also many others who have used this approach.

The benefits of the approach are operating through an internervous and intramuscular anatomic interval. It’s not necessary to detach any muscles from bone. It’s less invasive without being small incision surgery. Obese patients can be easier due to less distribution of fat anteriorly. You have anatomic positioning with the pelvic with the patient supine. It allows the C-arm for guidance if desired. And it’s easy to assess leg lengths and check the offset of the hip. There’s no need for post-op restrictions in the typical case, and there has been high patient satisfaction in my experience.

With that said, I’m going to proceed. Let’s get to Dr. Berend and proceed with the surgery. I would like to thank Biomet for making this possible tonight. Dr. Berend, are you ready?

Yes, sir.

Let’s go.

Great. Well, thanks, Roger, for that introduction, and welcome everyone to the Mount Carmel New Albany Surgical Hospital in New Albany, Ohio. We’ll be doing a right hip tonight. This is a 59-year-old female patient who is 69 inches, 175 lbs. I’ve drawn out the incision here, and if we go to the over head camera we’ll see, I’ve marked out the ASIS, which you can palpate in every patient, and we want to get right on the middle of the ASIS, two finger breadths or approximately two centimeters distal, two finger breadths or approximately two centimeters lateral, and that’s routinely the start of the incision.

My hand is about eight centimeters, and with my thumb about ten centimeters wide, and that’s routinely where I’ll start my incision, and again, running about two centimeters or two finger breadths lateral to a line drawn to the ASIS and the kneecap.

If we take a quick look at this patient's preoperative x-rays, which we have templated using the Biomet Microplasty Taperloc stem, you can see we're doing a right hip. She has mild dysplasia with cystic changes and loss of joint space. No real significant osteophytes we're going to have to worry about. Roger and I talked, before the surgery, about this patient being an ideal candidate for this minimally invasive approach, given her valgus inclination to her hips and her slightly dysplastic joint; otherwise having excellent and relatively normal anatomy. Any question or comments, Roger?

Yeah. I like the fact that she doesn't have a lot of osteophytes. I like the fact that this patient does it have a lot of hypertrophic osteophytes, which you can certainly get through this approach with no problem, but it's more challenging. This would be an ideal first case. So Roger, I'm bringing in the C-arm. So we do use fluoro, or at least I use fluoro, and I've really fallen in love with it. So I'm going to use fluoro to confirm my incision placement. Go ahead and give me a spot.

I think that's a nice option, especially in the beginning.

Spot. All right. So we'll save that and bring that up on our screen so everybody can see what we see there. You can back out. Can you see that image there?

Yeah.

So we've got the retractor coming across the basically the superior neck or the superior trochanter. And as Roger and I have talked about, you want to make sure the incision proximal enough. This one I had a little bit too proximal, so I'll bring it down about a centimeter, and down here about a centimeter. So that's where I want to have my incision. I should find my circumflex vessels right there in the center.

I've noted that if you have your trochanter in the center of your incision, you're usually well centered.

Right.

So we'll go ahead and make an approximately ten-centimeter incision. One of the things that Roger mentioned is this does not necessarily have to be a super small incision. Most patients don't have a lot of subcutaneous adipose tissue in this layer in the front of their hip, and what we're going to do is come down onto the front of the hip and we'll use the bipolar tissue sealing device. I know, Roger, you have used this thing. I find it to be very, very helpful.

I like it because you can use it even before you cut. Not so much here, of course, but when you get down deeper, you can treat your capsules before you cut, which I think is helpful.

Yeah. I agree completely, and we'll see that here hopefully in a second.

Now are you looking for the interval? Are you looking for the muscle? What are you looking for here?

What I'm looking for, Roger, is we're lateral to the muscle, and as you and I both know, we want to be a little more lateral with this approach, if possible, that way we can avoid direct injury to the lateral femoral cutaneous nerve if possible. Okay. So we come down and you want to see blue, and you can see the blue, then, at the tensor fasciae latae muscle. Remember, Roger said this is an intramuscular internervous plane, so we don't to go straight through the tensor fasciae latae muscle. Instead, what we're going to do is basically bring up the superficial fascia of the tensor, and I'll split that in line with its fibers and split it distally. And then underneath the fascia I want to undermine the tensor muscle. This gives me a nice fascia layer. Right here you can see it. This

gives me a nice fascia layer that's going to protect my lateral femoral cutaneous nerve from injury during the surgery and with the repair when I suture that layer closed.

So you're not looking for the nerve, you just simply know and you're protecting it.

Correct. I'm staying lateral in my interval so that I can stay away from it. Roger, how is our view there? Can we see okay?

It's a very good view.

So the next sort of pitfall that we're going to run into here are the lateral circumflex vessels. And now we're in the aponeurosis, we're in the muscle layer of the tensor fascia, so in order to find the vessels we have to come back out the other side. So we're poke through the other side.

Your head's in the way just a little bit there. Now that's good and a little better light there. If you could put another retractor anteriorly so we could have a little wider view.

How about another little retractor right here.

Yeah.

You have an army/navy or something, please, and knife? I'll just split the fascia there a little there as well, Roger. That will help us.

I think these vessels are important to find, because if you cut them, it's going to be a mess getting hemostasis. So if you can identify them first, you can deal with them easily.

That's correct. And Dr. Abanik, who was one of my mentors in training, you know, really pioneered the free vascularized fibular graft, and these are the donor vessels. And he said that there's not a patient on earth that doesn't have these vessels. And in our experience thus far with this approach, Roger, I would completely agree. If you can't find them, you're in the wrong place. A little suction in there. So, as you said, I'm just going to pre-treat this area before I go through the bottom of the fascia, and I've got rectus.

Okay. Your head's there. It's just a little bit in the way. Maybe they could move the camera more proximally just a touch.

Yeah, we'll see if they can do that for us. So what we're doing now is identifying those vessels. We've come through, and they're right here, Roger.

They go from the medius laterally to the rectus medially.

So they're always going to be in this layer right here.

And they're right at the intertrochanteric line I've noticed.

Yeah.

So that gives you an idea of where you are.

That also lets you know that you're in the right place, so we found them. They're spanning right here, and so we're going to treat them. This device, I saw an interesting study. It was done at the Vet cool here at Ohio State. Basically the tissue hemostasis and change in the collagen that occurs with this device is dependent upon energy and time. So you want to treat these vessels. I found this is the best way to treat them. I know I think you still may ligate them.

I tend to if they're big. But if they're smaller, I've gotten comfortable with this device. I really think it's helped. My hemoglobins have been about a gram higher post-op.

With the use of the device?

Yes.

Okay.

Can you have your retractor holders just give us a little bit of an opening, just a touch.

Yeah, we're going to get that in just a second. I'm sorry.

And maybe bring the camera in a little diaper so we're seeing less skin and more --

Here we go. Here's what we're going to do, Roger. I'm going to take the number seven so that we can all see. Okay.

Yeah.

I'm going to take the seven over the top of the femoral neck just like that. Okay. Now come down here with your retractor, Brian.

Now these retractors, of course, are from the manufacture, from Biomet.

Right.

They're microplasty set.

Right. Number six. So I like the seven over top, then my head is going to be in the way just for a second so I can make sure I'm under the rectus. The six under the bottom. Okay.

We have a question from the audience, a Dr. DeJulius, who wondered how many surgeries you have to do before you feel proficient here? I know you've thought about this a bit.

That's an excellent question. We actually have a publication in press looking at that exact question. And my feeling was that it took me about 35 cases to really feel very comfort and to eliminate the outliers the big blood-loss case and the real increased time case. That's about the timeframe when I was able to do the operation about 50 percent of the time. I now do it about 95-percent of the time, and so in my hands, I thought it was about 36 cases, but that did not include five or six hip cadavers, many of which I did with you, Roger. So now I've pretreated the capsule.

Yeah, that's important. You were treating that capsule there.

Right.

And that's that concept of pre-treating.

Exactly. I pretreated. It helps me establish where the head of the rectus is so that I can get underneath it hopefully to place this number nine retractor. And right now it's not really critical where it goes. As long as it's under rectus, it can go in the head. It can go in the capsule. It doesn't really matter at this point. But I want it under rectus so that I can continue to expose my capsule. Okay. What do you think on the learning curve?

No, I think that's good. I think, you know, five to ten, you're fairly comfortable with a straight forward case, and then I think you incrementally add complexity with more osteophytes and maybe a little osteopenic situation, then the heavier patients.

Yeah. I would say the ones to stay away from in terms of our early experience, the ones to stay away from are the very short obese female patients with a short neck. I mean those are patients that really can present very big problems, and the next choice is the heavy male patient obviously. So can everybody see? Have you got a good view there, Roger?

Yeah, that's good. If you could have -- maybe the camera could come in a little tighter, focus in.

This is an important view, so why don't we bring the camera down slightly if we can. Yeah. So we'll going to the -- if we go to the other camera, Roger, I think the learning curve in my hands is about 36, but that included a training course.

Yeah.

And multiple cadavers. So I think it's important that you have some type of a mentorship program.

Oh, absolutely. This is not something you want to do until you're very comfortable around the hip in general.

How's that look there, Roger? Are we getting close?

We're doing some adjusting there on the camera. I think the whole concept of how to learn new procedures is a complicated one. I like that image a little better.

Okay. So I've now split the capsule, and you can start to see the femoral head sticking out.

Now are you taking capsule out or just opening it and tagging it?

I'm going to remove the capsule, Roger.

Yeah.

How about you?

No, I am. I do. It can catch on the components as you put them in and you end up, you know, causing a lot of damage to the capsule and bleeding. I think you're better off excising it, getting good visualization. You can see your bony landmarks and get you components well purchased.

So I agree completely. I know Chris and John Cagey have worked on saving the capsule. I have not seen it to be important in terms of stability, knock on wood, from the front here. I have not seen it to have any real negative or deleterious effect by removing the anterior capsule. Now I would say that it is very uncommon, with the exception of the very, very severely protruded and/or deformed hip to have to release any posterior capsule. It will come right up with the hip.

No, I agree. The posterior capsule -- the whole point of this procedure is to try to preserve that. And even if you have to release part of it, you don't have to release all of it.

Right.

And it tends to be the proximal capsule that you release.

So, Roger, we're just working our way around here.

You know what you might try, Keith, for one second, if you could take the table, the whole table and rotate it to you just a couple of degrees, it would just give us a little straighter shot down that.

Let's bring the camera up a little bit, Roger. I don't want to move the table.

Okay.

Just because that's how I'm sort of used to looking at things in space. I agree completely.

But when you put your components in you could put that back.

How's that. There you go? Let's look at that. How's that? Okay. We can see our femora head here.

Now do you try to flex the leg at all when you're working? Under the rectus, that's a good view.

There you go.

That's the view we're looking for.

Sometimes you do, Roger, and this valgus hip, I don't see that it's necessary to do that. But sometimes flexing the hip can be very helpful.

But I think the point is both of your legs are prepped out so you can, you know, cross them and flex them a little bit and a whatever you need to do.

Yeah. Okay.

I like the fact that you have such a dry field. We have a question here from Dr. Hurley that wants to know who makes the bipolar device.

Okay. So we're getting pretty close now I think, Roger. I'm going to do my femoral neck cut now, and I am going to have to put my shoulder in your way for just a second, but we're going to go to the image on the screen here. I actually check my neck cut with fluoro as well. I'm going to do a napkin ring.

I think that's a great way to go. That way you don't have to make a definitive cut at this time.

Right. I'm going to do a napkin ring for two reasons. One is make sure I'm low enough that it's not going to be terribly in my way. You can see the saw cut there, Roger.

Yeah, we sure do.

And also to make sure I don't do anything silly. You know there was reports in the "JBJS" a while back about two incisions and some real catastrophic complications, which I think would be avoidable if you just, you know, check. You got fluoro in the room, go ahead and check your cut and make sure you're not doing anything crazy; right?

No, I think that's very important. I think the viewership should know that this is done under direct vision.

Yeah.

You are seeing everything you're doing.

Yeah. Now I think it's especially helpful you reinforce with the fluoro. And once you have fluoro, you're not going to not use it. But you don't have to use a lot.

Here is our napkin ring.

Now I tend to make my first cut right at the base of the cartilage. That's been one of my landmarks.

Yeah, I do it opposite. I mark it with my fluoro and then come in here and take my napkin ring out, and then we'll take the rest of the head out.

Sure. So I like that trick with the Steinmann pin. That's quick.

Steinmann pin on a drill. It's so much easier than a corkscrew, which you really have to struggle with. Although they do have a power corkscrew, I understand, works much better.

Yeah. But through these small incisions with the tissue and you're sort of down in the hole, so you can see the severe arthritic changes within this mildly dysplastic hip. Switch these. Come on out.

Again, like to see how dry this is, and it should be.

Yeah.

There's no bleeding you can't control in this part of the hip. But occasionally a bleeder down the intermedium, but you spend a little time. And that bipolar cautery, we have a question from one of the surgeons about that. And it's the -- it's called the Aquamantys and it's made by Salient, and I'm sure they have a website.

Yeah. And I find it to be very, very helpful. If you give me the Aquamantys now. Roger, how is your view in there? Do you need a little more light?

We need a little more light if we could.

Yeah, I thought so. Let me see if we can get you a little more light in there.

Yeah. Yeah, good. That's the acetabulum we're seeing. That's good.

So you can see the acetabulum. We're going to get a 365-degree view of the acetabulum here in just a second. So I have the number six over the anterior column. I have number seven superiorly, and I'm going to place the number eight here over the posterior acetabulum. Okay?

Uh-huh. Now have you made your definitive neck cut?

I have.

Okay. Good.

And I mark that with fluoro or else I would do like you do and do a sub-capital cut. Now, Roger, my head's going to be in the way here just for a second here. And what I'm going to do is complete my releases for my acetabular visualization, and in addition, can you see at all?

Oh, they've got the cross table view there.

Yeah. Which isn't terribly exciting but I'll get you right back in here. All I'm doing is, under direct visualization, looking at that inferior capsule and releasing some of it and debriding out the --

So you're the neck of the femur inferiorly there.

Correct.

Yeah. And also if there's a big neck of redundant neck of capsule there, or capsule off the inferior neck, I will resect that as well.

Uh-huh.

Okay.

I found if you rotate the hip externally here you can usually bring that capsule up at you and as you rotate take it and often get your finger down there and feel the lesser trochanter.

Yeah. And I've got it, Roger, down to where I can barely feel it. I'm not quite all the way down there. I'm not sure in her I'm going to need to be all the way down there.

Yeah. It looks like some labrum there that you're beginning to take off there.

Yeah, labrum.

Yeah.

And the nice thing with this view, I mean this is the traditional Smith Meet Jeu De view of the acetabulum,. I mean you can see the cut pretty easily. How's your view, Roger?

It's an anatomic situation just like you're looking at your AP X-ray on the view box.

That's right.

Or in this case the computer.

Yeah. Exactly. We'll make some comments later about acetabular positioning, but one thing I'll say now in case I forget is if it looks anteverted, it's too anteverted.

Yeah. It should look almost retroverted.

Yeah. Okay. Let's get a little light in there and take a look.

That's good. You got a little light in there whatever you did.

All right. So we've got a pretty good view in the acetabulum there, huh? Okay.

It's hard to see the acetabulum because it's such a deep structure. One of the tricks I did when I was learning this was I had a pelvis just on a metal side table so you could just get oriented, because it's completely different sideline.

So I've got these soft tissue preserving reamers that only have one band of teeth on them, and this is a 40-degree offset reamer so that I can get a straight shot down into the cup. Come on out. And then I actually ream under fluoro, Roger. I don't know if you do that.

I check. You could. I check. I ten to just ream.

I check.

I'm not going to ream by the fluoro is on, but I'm going to check a spot. And in her, I'm going to want to medialize a little bit. Spot. Spot. Spot. All right. So let's say save that image and we'll take a look at that one just to show what we're seeing here.

No. I think that really makes -- because let's face it, you're not really sure how deep you're going just by looking.

So how deep do I want to go? Spot. Spot. How deep do I want to go, Roger?

I would go until you're covered. I actually go almost routinely to the teardrop.

I agree.

Not always, but a dysplastic hip, you're probably going to have to.

Yeah, I agree. So we're going to go back to our view. We're changing acetabular reamers. I think one of the points here, when you're first reaming is you have a tendency to keep your hand up too high.

Yeah.

And because you think it's a sideline situation. Your hand is almost parallel to the floor. When I'm pushing on it, even with the offset, I tend to have it down almost on my waistline.

Yeah. I like to put my finger in there each time I've had a reamer and just feel the rim and make sure I'm concentric.

And I didn't say that, but that's exactly what I did.

Yeah. Spot that.

We've had some questions come in. One was the bipolar, we talked about that. The other one was about using a fracture table. Was the learning curve any different with the fracture table versus the regular OR table? I do both, and I think it's just surgeon preference. They're both just good tools. So I would say the learning is about the same.

Well I would say surgeon preference, but my hospital didn't want me to choose the retractor table.

Retractor placement and everything is identical in my hands, it's just whether you have a traction as an option. You'll see when we position the leg for the femur that it's exact same position that you would achieve with the fracture table. But the fracture table it's an uncomplaining pair of hands, which is never a bad thing.

Okay. Roger, this is a 51 reamer. We templated to a 52. Come on out. And I'm getting -- oh, yeah. Come on in.

There's another question here about extending the incision here if you had to.

Oh, this is an extensile approach, as you know, Roger. You could take this all the way down the thigh and you can take it all the way up over top of the ilium.

Yeah. We're using only part of what's called the "Smith-Peterson approach." The true Smith-Peterson, you would take the long head of the rectus for the direct head and go up and take the abductors off the ilium.

Flip to the other side. All right. Roger can you see that image?

Oh, yeah, that's perfect.

You see down on the wall. I'm fully covered. I got a 52 cup. So we'll take a 52 Regenerex ring-long plus acetabular component.

So you have a 52 reamer and a 52 cup? Is that what you're doing?

No. I have a 51 reamer.

51. Okay.

And with these reamers, Roger, as I think you know, this is an offset reamer, and the reamer has one band of teeth, so I believe, and in my hands it's a good view.

That's a good view of the cup, yeah.

I don't want to go line to line on her.

No. I think without a fin cup or some sort of geometry in the cup I think you need to press it at least a millimeter.

Okay. So we're going to use a porous metal cup. We're going to use the Regenerex it has an inner ring lock and a porous metal titanium.

That's not quite on the screen. There we go.

It has a porous metal titanium surface, a ring lock, which is an inset ring lock to keep soft tissue out of it, titanium, which obviously has a phenomenal track record. See the cup?

Yeah, we can see that there.

Then we've got an offset inserter. And, Roger, I like to do what we call the "baptism," where we give it a little baptismo.

Can't hurt.

And we do that to keep the soft tissue from sticking to it. So we're going to go in, and I'm going to use the bottom retractor has a little bit of a shoe horn, and then we'll take those retractors out.

Yeah. You often need to do a little wiggle, and this is where having the capsule present adds an extra degree of challenge.

Come in for a picture.

I think it's important to point out these types of offset tools. You know this operation has a reputation for being difficult. And you can see with straight tools it would be. But you're seeing the whole acetabulum, following direct vision. It's normal anatomy. You've got the C-arm for a check.

Spot.

It's really -- but you need to have these offset tools.

Spot. Now how hard are you hitting that?

Well I found that I have to hit it pretty hard, Roger.

Yeah.

That's been my experience. When you're supine you can see the whole torso moving. Okay. There it is. Okay. Let's save that image. Let's take a look at that. Roger, in this modern era of metal on metal, I know we're using E-poly, but we strive for, I think, cups that are a little more incline than what we used to. What's that look like to you?

I'd said it's about 35. I like it.

I like it too, and I think it's down. We compare it with our other image that we save and it looks the same, so we know it's down. We like our position. We don't look anteverted, so we'll go ahead and open a liner.

That's good. I know it always comes up here. Now why are you using poly here? I know at one point you were using metal/metal. What is your thinking there?

I have been anxiously waiting for some long-term data on the metal on metal here in the United States. As you know, Roger, and you and I have talked about this sort of at great length. You're sort of setting me up.

No, no, but my point -- let me answer any own question. I still use some metal/metal. But with this procedure here, it is very difficult to get a big head on that stem.

Yeah. It can be done. It can be done.

But it's really a fight, so it's much easier. And once they came out with the E-poly, I felt that, you know, I had an alternative to metal/metal in a young active patient.

Well, and, Roger, I think for us, do this anterior approach and going from, initially, the direct lateral approach -- it doesn't want to sit down in there -- you know, you and I were both direct lateral users, Mallory and Head users, and we tend to not be worried as much as about dislocation as --

Exactly. The soft tissues here are intact. It's simply, like I said, I don't think these patients need any postoperative restrictions for the average person.

I'm able to use porous metal on this patient, and I'm able to use a modern generation highly cross-linked, highly irradiated, and then vitamin E doped polyethylene, and, you know, the data on this from the lab and the early critical data is outstanding.

Yeah. It doesn't wear, and it doesn't oxidize.

And those are the two things that we worried about, and so if there's ever going to be a problem, it's also modular, Roger, which you and I have been doing all our liners changes through this approach.

Exactly. That's actually a good way to learn this approach. The tissues are a little woody, but you don't have to worry about component position.

So Roger, we're trying to get our liner down here.

It can be a little bit of a trick.

Yeah.

In fact, I've heard people say, "Wouldn't it be nice just to use a one-piece cup just because you're in this deep hole."

That is one of the nice things about the metal on metal, that's for sure.

And if I was still doing a lot of posterior approaches still, I would still use metal on metal more frequently because I feel that the advantage to the patient of that large head is really tremendous with that approach.

Yeah.

But here it's simply not necessary. And trying to get that big head in this little hole, I've done the whole procedure and then had to extend the incision just to get the head on.

Okay. So we've got our cup in. We're going to take one more shot just so you guys can see where we're at. Spot that.

I like that nice dry wound and the muscles haven't been damaged or anything. People always talk about this procedure damaging muscles, and that obviously is not part of the procedure.

Other way. There you go. All right. Spot that. Spot that or save that image and flip it over. All right, Roger, there we are. I think we've got good coverage, if we can show the X-ray image.

Yeah, we see it now.

Okay. It's medialized.

You've got good version.

You like that?

It's nice and horizontal. You've bottomed out. When you use titanium cups for so many years, as I have, there's a nice feel to these and that looks perfect.

Roger, I'm going to show the first step here from the front of our femoral positioning, and we're going to go to our other camera angle here. We're going to take this hook, which goes to the Omnitrack table-mounted retractor, I take my finger, go under the tensor, around the lateralus, and distally I can feel the sling.

Yeah.

And so I'm going to take this hook and go proximal to the sling and sleep it around. It's outside of the lateralus, around the hip, proximal to the gluteus, perfectly safe zone to go around. Okay.

Yeah. And you walked it around with your finger there.

I walked it around with my finger. Okay. And so if we go to that same side view, you can see we've got some stockinettes on the operative foot, and we're going to start to position the leg for femoral exposure. Betty Joe a little Chundelinburg, and then we'll jackknife the bed. So we're do about 10 or 15 degrees at a time. A little more foot.

Now one of the things in this position, I always keep my finger this the wound because I had the femur pull the cup out once.

A little more Chundelinburg. Are you guys getting a good view of that from the side there and then on top of the foot?

Yes, we can see it. The knife is extended.

Okay. Good.

And that's obviously what you need. So we've got the non-operative leg up on a Mayo stand. We have the operative leg hanging down with extra stockinettes because it's below the play zone now. And then when we come back up into position, you'll see us put an extra drape up on the table because we consider that to be potentially contaminated, although it is currently still sterile.

Yeah.

All right. So now I'll going to switch positions up to the top of the hip. I'm going to reach up to the bed with a now non-sterile stand and I'm going to mount this table-mounted retractor. This is an Omnitrack retractor. It mounts right on the side just like your arm board or anything else.

It's on the part of the table that's extending; right?

Yeah.

Not on the flat part.

It's on the part that's hyperextended.

Yeah.

You can see it point 45 degrees or so here. Okay?

So now my hand has been under the bed. It's a nice time to switch gloves. The data says your gloves are contaminated about every 45 minutes. So it's a good time too change gloves. And now we're going to put the rest of the mounted retractor on. Betty Joe will drop the table for us a little bit.

Keith, there was one question from a Dr. Carter here that wondered if, dislocations aside, what about just choice of bearing based on a patient activity? Are you comfortable with the E-poly on your active young patients?

I am, Roger. And as I said, my real impetus is I like the modularity, now that we have a reliable long-term poly, I like modularity, and I like a titanium shell.

Yeah. I think you're going to be revising a few of these, and I'd certainly rather do a modular revision than not.

Right.

I agree with you.

Now I'm taking my number eight retractor, my number eight retractor will go to the overhead camera. I'm going to slip it under rectus and Sartorius, and it's going to go right around the neck of the femur.

Yeah, the medial neck.

Okay. Are you starting to see that?

Yeah.

Are you starting to see right down in the neck?

Yes, we can see it.

Okay. Now I'm going to take number five. Number five is sort of a two prong, and the tendency here is to try and get this thing in, jam it in, and either break the troc or damage the trochanter, or jam it in and try to lever real hard. And all that does is damage the tensor fascia latae. Okay. We don't want to do either one of those things. Instead, what we're going to do is come over the top of the trochanter like this, and you can see with that little bit of exposure, all right, also notice I haven't put any tension on this retractor yet. All it's acting now is as a fulcrum. So now I'm going to start my release by grabbing this corner of the capsule where we left it on our approach, Roger.

So you're in the lateral neck at the base of the trochanter.

Lateral neck, top of the trochanter, you know, where the neck meets the trochanter.

Piriformis fossa, yeah.

Not yet.

Coming around.

I'm just taking a little fold of the capsule out right there deep to the abductors, and that allows me to then take this two-pronged retractor and put it lateral to the trochanter. How is our view there; Roger, can you see that?

Yeah. Could be a little better.

I'd go up in the air a little more here. I think the higher we go, the better view we're going to get here.

Oh, that's good.

How's that? Great view.

Yeah.

All right.

We see the cut surface.

See the cut surface. And, Roger, can you see right here where the capsule is attaching to the femur?

Yeah. Have the anterior retractor holder pull just a half an inch harder. There we go.

Okay?

Yeah. Good.

How's that? Can you see?

That's good, yes.

Because here is the important one right here, Roger. We've already released down here on our approach; right? We already released this capsule right here.

Yeah.

So now staying deep right within the shoulder, right where the neck meets I'm going to go around and I'm going to peel this capsule right off.

And you're going right down the bone; right?

I'm staying on bone.

Yeah.

And if you go to the other camera real quick and you look at my assistant, Kurt, has the foot next to his knee and he's figuring-fouring the leg, and this really was I think Dewitt's big contribution to this approach.

Yeah.

And that is the this figure-four position where he is externally rotating very gently, nothing hard, and he's flexing the knee slightly. The more you flex the knee, the tighter the rectus gets.

Yeah.

So you don't want to flex the knee. Suction. And then we go back to the other camera, and as I come around posteriorly -- not posterior but proximal posterior, I'm going to get to that most prominent point on the trochanter, and when I get there, that capsule is going to release, and the femur is going to come right up out of the wound. Notice I'm barely retracting on this retractor. The Mayo Clinic study, which showed damage to the TFL, was done with cadavers and without the Omnitrack. And so you're having to lever on the tensor fascia, which you don't want to do. Instead we've got gentle traction so I can see and I'm coming around, and as soon as I get to that posterior most, I'm proximal to the piriformis, and I'll hopefully show you the piriformis.

Yeah. Now would you ever go and pre-treat that with the Aquamantys or just afterwards?

Afterwards I'll treat it, especially when I get ready to do a reduction.

Yeah.

So, Roger, if we look now and we set up our retractor correctly, now I can give it a couple of clicks of gentle traction.

Yeah, I can see it pull up there.

And this is one finger. I'm not levering on this at all, and you can see it will just come right up out of the wound. It needs just a little bit more release right back here.

But I think it's important to emphasize, you're not cutting the abductors.

There it goes.

Yeah, can see it pop up. And you're probably taking the piriformis, wouldn't you say?

No. Piriformis right here. I'll show it.

Okay.

Piriformis right here. You can see the tendon.

Yeah.

See it right here?

Yeah. I wouldn't have any qualms about taking that if I thought I had to, because it doesn't retract very far, it's been my experience. That's a good view. You can see very well.

I would say 99 times out after hundred, Roger, we're able to save that piriformis as long as you take your time, your assistant doesn't over do it. If your assistant over does its it in an elderly patient, that posterior capsule will pull the corner off of the trochanter.

Yes.

So you take your time, you're going gentle, and the femur will just come right up. And you see there's not much tension on this. It's just acting as a fulcrum. Okay?

Uh-huh.

We got a really good look down in there, so I think we're using the microplasty instruments. We're staying posterior here. We're going to open up.

Again, you've got offset instruments. You can do these with straight instruments.

We've got an offset rattail. There's a long and a short. I prefer to use the long if at all possible.

It's got a blunt tip. It's got a blueprint tip and it's toothed so I can get down in the canal and then use this to get out laterally.

Yes. Yes. Start against the calcar and then work laterally.

See that? That makes it very safe, because I think I can tell you within my first 50, I put two out the side, and that's because I struggled with exposure and I struggled with that step, and now with that rattail and being very careful, we don't have that happen again.

No.

I do know this is the microplasty stem. If you compare it to the standard stem, you can see it's not only shorter, but it's cut at an angle, which gives it a round appearance, somewhat round appearance. Suction. Now interestingly, Roger, the good data from our Vet lab here at Ohio State says that you can treat bone without killing it. So if I get some really brisk bleeding bone up here at the top of the femur, I'll pre-treat it. And I'll go ahead while I got the machine in there, and pre-treat that posterior capsule a little bit.

I think that's important. When you reduce that, you can get into some impressive bleeding. It's not dangerous though, but it's still impressive.

No. Okay. So here we go. See that go in at an angle?

Uh-huh. Pushing laterally.

Yeah. And I'm pushing lateral, so I don't go out the lateral cortex.

Yeah.

It comes in from the calcar and you tap it. And if you look carefully at this broach handle, it's angled here, and that's where I'm driving it, Roger, is to drive it in an that curved angle.

I like that.

What did we template on this one? So I templated this to an 11. What do you find on your templating Roger, accurate, not accurate, using packs, not using packs?

We actually do both. We're sort of in that transition. No, I think the templating is crucial. I rely on it for lots of things. We're now using it now to judge leg lengths quite accurately. But I have found with the microplasty if I template one size standard Taperloc, I almost get in a one size larger microplasty.

Yeah.

And this is a stem that I'm very comfortable with. It feels like a step, but boy I think you need to get in there tightly.

Well, Roger, as you just said, I templated an 11, and this is a 12.5 broach, and it is rock solid.

Yeah. We have a question here from a Dr. Johnson. "How often do you see fractures while doing this?"

Very good point, and I'm glad you asked that, doctor, because this calcar mill -- okay, I'm going to mill down the calcar for trialing purposes. It's a collarless device, so the only reason you do this is to trial. This calcar mill has a single cutting tooth, and we use it on a reamer, so it's low RPM. Having used this stem and this mill in over 500 cases, knock on wood, knock on wood, there have been zero interoperative fractures, zero. That's compared with four percent using our previous stem and compared with over 15 percent with a different type of stem that has a toothed broach, where in my hands same approach, same patient population, I have over a 15 percent risk of fracture if I use the wrong type of cutting tooth. I think it's critically important, because this thing can grab something and it torques the broach and can break the femur, which is what happens with one of the competitive designs.

Like I told you, I just take a flat-tip Midas and just work this around. But this works good too. But just fractures in general with this type of stem, obviously it can happen, but I think that with some diligent and templating and going incrementally, it should be a rare occurrence.

Let me show you one other thing on this as we're getting ready to do our first trial reduction. I am right down to the piriformis shoulder, okay, that piriformis fossa. That's how I template, Roger. I want to see the shoulder of the prosthesis against the piriformis, and then I know that I've got my neck cut roughly where I want it to be.

That looks like a lateralized neck.

I have templated it to a lateralized. We saw that on the pre-op films. She has a valgus lateralized neck.

What head is that?

That's a 32 minus 3, which means that I'm looking at using a Delta ceramic. So now we're going to take off our contraption. We'll leave the hook in place. And then, Roger, I like to put my finger

into the socket because automatically I can do the Ranawat and I tell if this is going to be long or short before I relocate it.

Yeah, exactly.

If you relocate this and it's really long you will not get the head back out.

What I have done on that occasion is taken a quarter-inch osteotome and just taken the whole neck off the rest.

Now if you look at my assistant at the end of the bed here, he's now doing his first check of leg length. He's got the legs up on his chest. We're feeling the maleoli and where the foot lands on his chest, and so he's doing a little gate lab study right on his check there.

I think that's one of the main advantages is you can check leg lengths so easily.

Spot that. Good. Take it off of mag, please.

Then, of course, with the C-arm you can look at your offset. You can compare the other side if you're so inclined.

Spot that. There we go. All right. Let's save that image. Go to the other side. Now I'll tell you one other thing about this approach, Roger, is that the stem size and stem position is right on every time, because if you look at this image, I feel like that's a really good size there.

Perfect. I like the way it's in the low valgus. You've got that tip against the medial calgar, and you've got the shoulder laterally against cortex.

How does it feel there, Kurt?

That's going to be a very stable stem.

Now this is ideal for me, and that is that my trial stem, which I like, on a minus three, which is my shortest ceramic neck, is a little bit short. That's ideal for me, and I feel like I've templated it and done it correctly if my first trial is a little short. That makes things a little easier, doesn't it?

Yeah. Because sometimes you lose a couple millimeters putting that final stem down.

Yeah. Now he is an important safety tip, Roger. When I dislocate a smaller head like a 32 or a 28 head, I am going to keep my finger over the top of the head to prevent it from jumping over the pelvis. There's been reports with two incisions in particular, when you do that dislocation maneuver, the head can jump over the pelvis. And, in fact, I think one of the implant manufacturers actually puts a hole in their trial heads for a string to get it back out when it goes over the pelvis. I have not had that happen yet, but the night is still a little young so let's not have that happen. All right. So we like that one. Thanks a lot. Rongeur. Here's another tip, Roger. We've got a number eight retractor in. We take a Rongeur to get this trial off.

Looks good.

Before we try and get our number five in, because now I can take my finger and I can put it right over the tip of the trochanter where I want that number five.

If you look at the insertion of the abductors, you're not damaging them at all.

Not even close to them, actually. I like that your skin edges are good. The muscle edges are good.

Yeah, look at the skin edges. There's nothing going on here. And I'll particularly pay attention to this tensor fascia latae.

Yeah.

The time when it gets injured, and I didn't mention it and I should have, Roger, the time when it get injured is when you pull your napkin ring out after the end cut, because the retractor comes out and the napkin ring comes up through the wound and literally cuts that tensor fascia muscle, so you want to be careful of that. We've damaged -- we've cut no muscle. We've detached no muscle from bone. There will be minimal, if any damage to the tensor fascia.

And it doesn't look like you had any bleeding when you had that reduced either.

Well I pretreated it, Roger.

Yeah. Exactly. But if you don't, that posterior capsule can get your attention, so what you do is you know, expose it again and get you cautery down there.

So we're irrigating in preparation. My good buddy and mentor, Rob Trousdale, taught me really pay attention to this bone up here. This is what you're trying to get to grow onto the stem, and you want to make sure there's no fat, no fascia and tissue and goop going down in there when you go to put this stem in. Here is our micro Taperloc. It's two-thirds porous coated, one-third mat finished. This is a lateralized version, and this is porous plasma spray. It is the exact same shape proximally as a standard Taperloc, and we have had excellent experience. I don't know how many Lombardi and I are up to now, but I think it's either close to or over a thousand of them, and it sits down perfectly there, Roger.

Uh-huh.

And I think it looks great.

Did you torque it or twist it or anything?

I normally don't, but I'm happy to if you want me to. I mean you know this stem as well as I do. This isn't going anywhere.

No. No.

Let's see a zero. Would you ever put any bone graft if you see a little nook or a cranny?

I will. Particularly if there's a nook or a cranny. Particularly that happens if you miss with your box osteotome. In the varus male that can happen, and if that happens, you just need to -- I take the bone out of the bone plug from the box osteotome and stuff it down in there with a flat bone dam.

There's two questions. One is, "Do you concerns about you post-op weight bearing restrictions with a collarless stem?"

No.

Okay.

I mean we just reported on 2000 Mallory headlong collarless long porous titanium stems, stem survivorship 98 percent and out to 24 years, and all those patients were weight bearing as tolerated. Come on in for a picture, please.

No, I would agree. If you've got good fit and fill and you're happy with the position of that component, and the bone is reasonable, I think you can let these people weight bear as tolerated.

Spot that.

Then there's another question about equal leg lengths. If you're going to do the other hip at some point, would you try to make this hip longer? Yes. Okay. So I'm feeling this down here, and I've got a standard in, I think I'm going to go with a plus-three. But let's prove our point. I'm feeling the maleoli with my thumb. I don't know if you've got me on the camera there.

Yeah, we can see.

And I'm also feeling where the heels are lying on my chest back and forth a little bit to try and get her pelvis level, and I think she's just a scoch short, but here what we're going to do is -- give me a long alignment rod -- we're going to center her up on the pelvis.

Yeah. She's short on the operative side?

A little bit short on the operative side. Let's get to the bilateral thing in a second. Spot that. Can you counter rotate that a little bit.

This is a nice trick. You can take the C-arm and just --

Other way. Yeah, there you go. Too far. She's not fluoroing right now. She's just adjusting our image. Right there, that's a nice spot. Where do we want to go? Down? No, we want to go up. Spot that. All right. And one more time, spot. So if we externally rotate -- come toward you a little bit. Spot. And externally rotate. Excellent. Save that. Put it on the other side. Okay. Now come towards me, and spot. More. Spot. Actually rotate a little bit more. Spot. Spot one more time. Spot. And spot. All right. So let's look at that first saved image.

Yeah, we've got the left image now on the screen.

Let's go to the operative hip. Save that. Flip it to the other side.

Okay.

We need a plus-three.

Yeah, you're just a touch short.

Yeah.

That's what you felt clinically.

Yeah, that's exactly right.

That will help her offset too.

Yeah.

There's a question here about your landmarks for stem broaching so you get the correct anteversion.

Well, with this flat wedge tapered stem, Roger, it's going wherever the femur wants it to go. You can't change that.

Would you make some adjustment on the acetabular side, or course, it's too late now in a way.

Right. With this approach I would not. Yeah. Because the stability is so good.

So good, yeah. Now if it were a dramatically anteverted hip, DDH, something like that, I might consider doing something different.

Yeah.

But, you know, even with this mild dysplasia and slight anteversion.

Yeah. The point here is you do not have any adjustment on the femoral side for version. If this was a cemented hip, of course you could do a smaller stem and rotate it in the canal, but there's no option here.

That's correct.

But in actual fact, for the actual person that's simply not a problem.

That's correct.

And then you're soft tissues are intact, and not just your capsule. Your rotators are intact. Your gluteus maximus is intact.

I mean there's a lot of stuff holding this hip in.

These people are just totally different than your hip that you've taken down all your muscles. Yeah.

And, Roger, remember, you and I both -- and I know you've had some experience with the posterior we could talk about, but I was a direct lateral surgeon, and going to this approach, and we've also published. We've got coming out in "JBJS," the early six-week recovery is dramatically different between a direct lateral abductor splitting approach and this anterior supine approach. Let me get this head on.

My experience, these patients have full leg control in about 24 hours.

Yeah.

They can get out of bed and get to the commode.

Delta ceramic hip, this is the next generation ceramic. 32 enlarger, there's been no reported fractures.

I notice you're not impacting that on. No. I've actually twisted it on, which is I think what they tell us to do and then give a little impuqe. You got the skidoo? Now I want to be very cautious not to stab this or scar it with metal, so we take that out. Come on down. So it's a good time to take the hook out right there while you've got the hip dislocated. And, again, my finger is in the cup, making sure we're not doing anything silly, and we'll bring it right down in there. Flatten the bed out for me, please.

Now are you going to do a stability check?

Yeah. Unfortunately, let me just show you as we're flattening out what the first move my assistant does, if we go to the other camera. We're flattening the bed out and putting a clean drape down because it was down towards the floor there. Hang on one sec.

Obviously if you're doing this technique, you have to be very careful with contamination from the floor.

That's right. Table up, please. So once we relocate it, Kurt will take it up. Take it up like this and checks it, and frog leg, checks in hyperextension and external rotation, and then we'll bring it up as a last step, and it actually stops. And if it were retracted or contracted, you may even have to release the posterior capsule. I can't get her to go much further. I don't think she'll have to go much further than that. But even in that position she's exceptionally stable. Okay.

We have another question from Dr. Johnson. He's been very good with his questions tonight. But he wants to know what type of operating table you're currently using.

This is a standard radiolucent table. Who makes this? Who?

But it's a standard?

McKay.

McKay, yeah. It's just a standard table, although we have it backwards and his feet off the end, as you can see. It's not backwards? We just have the feet off the end. The head is put at the bottom. What is it? Oh, the head piece is put on the foot, and the patient is moved all the way down so that his pubis is right at the level of the break in the table.

I'm sure every manufacturer has an appropriate table. I can tell you we have a table made by Amsco that works very well for this.

Save that. Flip it to the other side. There you go. So next thing, Roger -- let's flip that. We got our final image there. How's that look?

Perfect. I like -- nice valgus stem.

And we come back to the screen, we're injecting our special cocktail. Dr. Ranawat has described the big ten -- or excuse me, the Big Mac, and this is the big ten, because we're in Ohio with our Buckeyes, who not only can the basketball and the football team, but apparently the baseball team can get blown out in the championship as well. Would you inject the capsule or just up above the muscles subcutaneous tissue?

I'm in the muscle, and then what I'll do is go down and I'll actually feel where the capsule is along the medial neck.

Yeah.

And go right in there, and that's about it for me. Because we've treated it. You see there's very little breath bleeding. We've treated it with Aquamantis.

No, it's amazingly dry. I just want to -- I had a couple times when I really had some bleeding back there, and this was pre- Aquamantys, and I've injected some epinephrine solution and occasionally packed some Gelfoam back there.

Sponge, please. So we have irrigated, we've injected. Now what about a drain, Roger? Well I use a drain, but I know that you don't.

No, I do, you're right.

Oh, you do. Okay.

Absolutely, every time. I use a drain because I've done that big capsulectomy in the front, and I think there's a pretty decent potential space. This drain will come out at 6:00 a.m. tomorrow morning, and routinely these patients will go home in less than 24 hour. Will be full weight bearing the afternoon of surgery. Obviously this is evening, so she'll get up tomorrow morning.

And she'll go home tomorrow night or the morning after? With this nighttime surgery, I would imagine if she feels great, she'll go home tomorrow. If she doesn't, she'll go home the morning after.

Yeah.

But routinely our length of stay is about 1.3 days, and interestingly that's for our direct lateral hips as well. It's about 1.8 days over all for all our hips.

Is she going to get some injectable pain medicine or just oral medicine?

We use oral pain medication. Betty Joe and Dr. Reno have done a intrathecal spinal narcotic, and then we have to control for her nausea that occurs, so she's got a scopolamine patch. She's got Zofran, and she's gotten some Decadron, some steroids.

Yeah.

Roger, let me show you this closure real quick.

Yeah. Okay. Good.

All right.

Uh-huh.

Look at the tensor fasciae latae.

It's good.

I would say it is undamaged, so we've cut no muscle. We've damaged no muscle.

It's so important because there's been some literature suggesting otherwise. Well as I explain, Roger, that literature comes from the cadaver, where everything has to be forced and the tissues are not normal. So this is called "Quill." This is from Angiotech. It's a bashed suture. See how it's stopped?

Yeah.

It's stopped here. It doesn't pull. And what we do is a simple running suture.

What's in your big-ten cocktail?

And we just take the edges, and I'll show you here with the --

Keith, what's in the big-ten cocktail?

Oh, sorry. The big ten is Toradol, Epinephrine, and Naropin.

Okay. Some people add to that a narcotic sometimes, and some people add a steroid.

Yeah.

I think you have to be comfortable.

Some people add antibiotics.

Yeah.

Roger, so see this is a Quill, so it's self-locking. It's got little tiny barbs all the way around it, so there's no knots, so we don't have as many issues with wound grief in terms of spitting wounds or spitting vicryl sutures.

Are you being careful not to catch the nerve with that? Are you not worried?

I am being very careful. I'm looking directly at where the edges are. Laterally it doesn't matter as much to me.

Yeah.

Medially is where the big branch of the nerve is.

Yeah. You wouldn't want to take a big bite of that fascial tissue. You want to be right on the edge.

You can see my edge right here, Roger.

Yeah, perfect.

Is that okay?

Yeah.

Okay.

You got a good view.

So then with this material, it's a PDS or PDO-type material. We'll just simply cut it, and there's no knots that cause suture reaction or spits, both in the deep and the subcutaneous layer as well. So we're being very cautious, as you said, to make sure we don't get the nerve. How often do you get some people that complain of some paresthesia?

We looked at a whole group, and we had about a 20-percent incidents of numbness that had almost always resolved by the first office visit, and the few lasted a little longer. I have a fewer complaints about this lateral femoral cutaneous nerve than I do about the nerve around the knee. And we have no neuritic painful burning thighs.

I've had two out of however many we've done now, and it's a pretty decent number. I don't know if we're up to 700 or 800. Quill is made by Angiotech.

It's just not a problem. You have to be careful and you have to put your --

I've had two and one has resolved pretty clearly with Lyrica, and the other one I think still is lingering a little bit.

Yeah, you're going to get a few, but not very many. And if you keep that incision lateral, that's the key, and if you protect the nerve.

So then we'll use the zero and then use some zero in the subcutaneous tissue, and then we'll use a 2.0 in the subcuticular tissue, and then close all of these wounds with Dermabond or the skin glue.

Perfect. Very good.

Questions?

Listen, I want to thank you, Keith. You did a great job. We saw well, very slick. This is an excellent procedure. I encourage people to, if they're interested in this type of procedure, to pursue it, to do some courses, mentor with some surgeon that's familiar with this. But I personally think this is going to be more and more common, and it's going to be patient driven in my experience. It doesn't mean you can't -- not everyone's going to go to it. It's not for every surgeon. But it's a good technique, and it's simply not going to go away. And for those of you who are interested in it, I recommend it.

I want to show you my NASCAR peel. You can peel that right off of there on the new Striker helmet. We just got those today, but it's just like NASCAR, and I like that. Any other questions, Roger, from the e-mails that we haven't touched on?

No. We've had them all.

I'm a big NASCAR fan, so I had to peel that all there.

Okay. Listen, good night, everybody. Hope you had a good time.

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