

Zimmer M/L Taper Hip Prosthesis with Modular Neck Kinectiv[®] Technology

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Welcome to this "OR Live" Webcast presentation brought to you by Zimmer. During the program, it's easy for you to learn more about the procedure. Just click on the Request Information button on your Webcast screen and open the door to informed medical care. "OR Live", the vision of improving health.

Good morning. Welcome to Northwest Medical Center here in Tucson, Arizona. My name is Dr. Audrey Tsao from Sun Valley Orthopaedics in Phoenix, Arizona. We're here with Dr. John Maltry in his operating room doing an "OR Live" Webcast on the Kinectiv Total Hip System. At this time, let's join Dr. Maltry in the operating room.

Hello, everybody. My name is Dr. John Maltry with the Tucson Orthopaedic Institute. Today we have Dr. Brian Lenius doing anesthesia for us. Here's Kim McNurlin will be our PA assisting, Mr. Denton McGeshey as a second assist, Christina Marble handling instruments, Dave Elling on bass fiddle, I guess. And we'll get started here.

The procedure today is going to be the minimally invasive arterial lateral approach to the right hip in this gentleman. We're going to be installing the Zimmer Kinectiv Hip System today and we'll walk you through that. If we have questions throughout the procedure, please feel free to send those to Dr. Tao and we'll get those answered or you as we proceed.

Patient's in the lateral position. We've already marked out the boundary of the greater choke header and the anterior superior at the spine of the right hip. And at this point we'll begin. All right, the incision starts from the superior anterior portion of the greater trochanter and carried to a point approximately one or two centimeters behind the ASIS, for a distance of about 8 to 10 centimeters. There you go, spongee. We'll simply carry that down through the skin and subcutaneous here. We're going to go down to the level of the tensor. We've already made a little perforation in the tensor but it's clearly visible. We'll incise in line with the wound and in line with the fibers of the tensor, being careful just to go through the fascia and not injuring the gluteus medius beneath it. We'll simply undermine underneath the anterior flap, reach around the anterior board of the medius and underneath it, put a retractor over the femoral neck at this level. See if I can -- this a little better.

Now John, you're doing this all bluntly with basically digital palpation?

Exactly true and I simply have got my thumb on the femoral neck here. Going to put one retractor just posterior to the neck. But we'll put another anteriorly. And here with a few interposed fibers of the minimus here, we're up on the capsule of the femoral neck here. In the inferior posterior aspect of the wound I can palpate though the capsule, the greater trochanter. And I'll begin my incision though the capsule at the tip of the trochanter and I'm going to ultimately make an "H" shaped incision in the capsule. I can be pretty aggressive with this because immediately underneath me is simply the femoral neck. And I'll carry that superiorly here until I am physically stopped by the mouth of the acetabulum.

Is there any we could get a little bit of more in shot right directly above the capsular incision?

I'll make this and then I'll stop and let you all have a look.

Okay.

And if --

So John, this is an intermuscular plane but not an internervous plane, is that correct?

That's correct. We have the plane between the gluteus medius posteriorly and the tensor anteriorly. And often when we develop this interval -- not today, we're not seeing -- there are fine connecting fibers of the superior luteal nerve here. And you just saw the light twitch as we stimulated one of those fibers. What I'm going to do now is -- Deb you can lift a little -- we'll take a little pressure off of the abductors. And I'm just going to take my same retractors and slide those interarticularly.

So now you're inserting this interarticularly on the bone, itself, inside the capsular incision?

Indeed, and I'll release this capsule here a little more.

Do you ever have any problems with any type of weakness, post-operatively, with those little nervous fibers that you might be getting at the superior portion of your incision?

We don't seem to. I suspect there's multiple fibers. And as long as we don't carry the incision too far superiorly up on to the lateral wall of the ileum, we don't seem to get into those fibers really much at all. We'll reposition you a little, Kim. That's better, all right. Here we can actually see the femoral head, its cartilaginous articulating surface. And in the superior aspect of the wound, this is the rim of the acetabulum.

What we're going to do now is attempt to transect the femoral head directly in line with the acetabulum. And I try not to make that cut completely through because we certainly don't want to injure the acetabulum underneath.

And your retractors are protecting your acetabulum?

Right. They're around, both posteriorly and anteriorly around the acetabulum, but inferiorly either articularly in theory I could plunge that saw through and do some damage to my acetabulum.

So be gentle.

So we try just to get that about, oh, perhaps 2/3 to a little more of the way through and then I'll insert a -- this is cob elevator -- into that wound and complete this so we can get that neck to start elevating to indicate that we have indeed completed our osteotomy and can begin to displace that osteotomy.

I see.

Let's remove these retractors. What we're going to do now is externally rotate the leg and see if we can adduct it a bit and displace this osteotomy. It didn't move. Sometimes that osteotomy remains in place and the hip doesn't dislocate. As is the case here, we can simply with gentle external rotation pressure, we can identify our osteotomy once again. We'll just have the cob.

Jeron, can you show us that osteotomy? We're getting an overhead view now.

Okay.

Varying now, okay.

Here's the cob in the osteotomy. Okay, and then we'll simply attempt to elevate that femoral neck up into the wound and completely and further displace that osteotomy into this position. That allows our leg holder now to get this leg into this position of essential 90 degrees of external rotation. And we'll try to

keep the femur now parallel with the floor so that I have good reference points as I begin to examine the femoral neck.

Jeron, can you show us that leg position one more time? Can we show his front view of how they're holding the leg?

Okay, once again the patient's up in the lateral decubitus position. This leg is now extended posterior to the other leg and externally rotated at 90 degrees.

So you're going posterior to the down leg?

Yes, I am.

Okay.

All right, we'll place one retractor now just inferior to the femoral neck. A little lift then. And I'll place the posterior retractor over the greater trochanter, over the posterior aspect of the greater trochanter. Let me reposition you a little more inferiorly on this neck. Good. What I'll do now is simply get rid of the last bit of capsule that I didn't -- wasn't able to get on my initial approach to begin to orient -- this is the dorsal aspect of the femoral neck in the area that we'll call the saddle which is the junction between the greater trochanter and the superior femoral neck. I'll simply remote a little more capsule from this. Need a little more light on the subject here. There we go. I'm going to try to not to cut these fibers or muscle but simply work underneath them and get the capsule taken out the inferior neck here.

Now you actually haven't done a capsular incision here. You've left the wings of the capsule in the wound.

The -- we have not done a capsulectomy, we've done a capsulotomy at this point.

Okay.

Give me a little lift, Denton, see if I can show you that greater trochanter a little better. All right, cleared a little more capsule here. Once again, working in that saddle region.

Now as you do this release, what tells you how much and when to stop?

Actually at this point it's really not a release. What I want to do is get a clear visualization of this saddle region and of the anterior portion of the femoral neck. My preoperative templating -- see a broach -- tells me that from this saddle I need to measure down, inferiorly down the femur, approximately one centimeter to the shoulder of my prosthesis. And then I will simply use the prosthesis to guide me to make a cut along the face of the -- which will mimic the face of this -- the broach. Anybody have a saw? So using the broach as a guide to give me my angle -- there you go, Christian. And once again -- I don't know if we can see this -- but beginning the apex of my cut one centimeter down from the saddle, we'll begin our cut. And if we're careful with our saw, we can easily feel when we've completed these cuts. Got an osteotome? Our neck fragment should now be free and we simply displace it utilizing an osteotome. And have we got a Lane? And now we'll try to get it out of here. This is our neck fragment that we've just taken out, put it back in its anatomic position. This is the cut that we've made which comes down from the saddle. This is our osteotomy of the femoral neck. This is our osteotomy that we made originally through the femoral head. We've simply removed that piece at this point. Now we'll reposition our leg again, which is basically into an anatomic position with simple slight external rotation. And now I can feel the acetabulum with my thumb and that small retained piece of femoral head. Take a single retractor and place it just over posterior rim of the acetabulum. Another retractor, which I'm going to punch through the capsule and place now just on the anterior rim of the acetabulum. And we can see this retained fragment of head, which moves pretty freely within the acetabulum. Let's have a pony Hohman.

I noticed you're not using the lighted retractors, so you're basically doing this with MIS retractors and not using the additional lighted components. You think that you're comfortable with that exposure and

lighting?

Yeah, that's correct. This -- certainly with just reasonable overhead surgical lights, we seem to see just fine. What I'm doing here is simply levering the femoral head now out of the acetabulum. Let's have a Lane once again. And just utilizing a Lane bone-holding forceps here, see if I can capture that head.

Now one thing I notice, as you've made your osteotomy, do you do any free determination of anteversion of the femoral head and neck on the femur at the -- prior to doing any of the osteotomy work or removal of the femoral head or by looking at the leg position?

Generally not. We try to make the determination of whether anteversion and angle of the femoral neck is relatively within normal boundaries with our preoperative templating.

Okay.

People that have -- such as CDH'ers for instance -- that have excessive anteversion, I would not recommend this procedure for, owing to the fact that the stems that we're using can allow for addition of some additional anteversion but certainly not the degree that we sometimes see in those conditions. Now, with the head up. Can we have a 15? Yeah. We'll see if we can use a large curved retractor just posterior to the acetabulum. I like this because it presents a nice, flat, broad base to retract the gluteus medius.

Nice rounded edges so that we minimize our trauma to our muscle?

Exactly true. And without removing any labrum yet, we can see that we get very nice exposure of our acetabular fossa. Let's go deep, deep.

Now in terms of patient positioning for acetabular orientation, anything special you do in that arena?

Yeah, as we -- I think it's critical that we put the patient on the table in a very predictable fashion. In this case, we've used a device, called the Montreal Positioner, which anteriorly allows us to have a very rigid post that's fixed to the table. And I can roll the patient up on their side, placing both anterior superior iliac spines against that post, which then assures me that I'm directly lateral, also assures me that my pelvis isn't tipped one way or the other. That will become critical ultimately as we then try to ream and try to position our acetabular component. While we've been simply cleaning away inter-acetabular labrum remnants, at this point we're going to look and see if we think we have any severe osteophytes. We've identified on preoperative films that in this case we don't, but this is a very nice time that we can access those osteophytes that we tend to get about the acetabulum. While we've been preparing here, Christina I back has been measuring that femoral head, all right, and beginning to assist us with thought on where we're going to start our reaming. We're going to use these cutaway reamers with square teeth that Zimmer provides for these minimally invasive procedures. And indeed they are very sharp. One of our minimally invasive principles that we like to obey is to try to have as few passes of these sharp reamers through this tender muscle bed as we can. So generally, we'll start with about 3 millimeters below our anticipated size, which today on templating and here with measurement is going to be hopefully a final size of about 58 millimeters.

So you're starting with a what size reamer?

55.

A 55? And what size did you measure your femoral head?

58, right. Simply introduce this into the acetabulum, all right.

Now positioning, do you medialize at all if you feel there is a medial osteophyte or do you go directly to the position you want your acetabulum component to ultimately be?

All right, I tend to medialize but only to the point where I can get a good leading hemisphere. I am not fanatic about medializing all the way down to the inner table.

And do you like to release the inferior labral ligament or do any foveal debridement?

I'll only debride the fovea if, during my reaming, the obturator branch starts to bleed that tends to come up through there. But today we can see that we still have down in our obturator, this soft tissue. I'll simply tend to ignore that if it's not in the way. I don't know if we can show in the posterior inferior aspect of the incision it's a heavy band of tissue coming across which certainly can be commonly mistaken for the transverse acetabular ligament. Indeed, that's not in this case. This is simply a fold of capsule. We shouldn't take that capsule out. It will help -- see we want to keep it and help with stability.

Now at this point in time, do you ever do a capsular release if you have a very stiff hip and you're having problems mobilizing the femoral portion of the patient out of the way of your acetabulum?

Generally that's not necessary. Sometimes we'll perform simply a split of this inferior capsule to help get that out of the way and help pass our instruments better. But generally, no further releases are necessary. Now we'll pass our final reamer. I tend to always try to spin these reamers backwards before we spin them forwards in these cases where we're becoming very aggressive and reaming all the way up to size in just one or two passes. These reamers can get hung up on osteophytes, they can certainly get hung up on the tips of retractors that inadvertently are placed interarticularly. And if we'll spin backwards, we can expose all those facts. If we spin forward and actually catch the reamer teeth on instruments or on osteophytes, we can have the reamer jump and do damage we don't want.

So this reamer you have in now is what size?

This is 58, this is our final reamer.

Can we show how much bone was taken out with that acetabular reamer?

Because I ream for depth with my first reamer, now I'm simply reaming for size, for diameter. Focused in. So at this point we've got a good bleeding hemisphere of good supportive bone throughout and I'm satisfied that we've got a good bed here. Robert, what we need is a 58 acetabular shell. While he's opening that, can I have the rojure please?

And which cup acetabular component are you using?

We'll use the Zimmer trabecular metal acetabular component in a modular fashion today.

My favorite component.

And with a nice largely intact acetabulum, we will use it with a minimum of holes, called the cluster pattern.

And in terms of your placement, what's your idea position for this cup?

Interestingly enough, with this approach, initially in my experience I operated through a posterior approach where we tended to antevert cups perhaps 15 to 20 degrees. As I learned this operation, we tend to in a normal acetabulum try to antevert the cup and match the acetabulum here. But as we'll put the socket in and line it up, you'll see that it would appear that we're inserting these acceptably in just 5 to 10 degrees of anteversion with approximately 45 degrees of theta. So we're pretty well clean here, guys. Got a cup? Here's our trabecular metal cup. For the tolls, we'll use a dog-leg type of inserter to allow for facilitation for our soft issues.

Once again, getting the cup in, we'll simply try to shoehorn the cup inside the wound.

Yeah, the trabecular metal tends to catch on a lot of different things. Any special tips in getting this in without dragging a bunch of soft tissue in in these minimally invasive incisions?

You bet. What we'll try to do to minimize that is we'll try to use our retractors as skids for the widest part of this socket. And at that point we're not tearing up tissue -- give me a little indent -- plus it will help guide us down. We tend to line the cup up in its position instead of sort of the standard toilet plunger technique and we'll tend to just place pressure and just try to deliver this cup straight down to the acetabulum. Sometimes this anterior retractor is what holds us up. But most of the time the cup will -- I'll put you back in here -- deliver down to the acetabulum introitus here. And we've got this cup partially seated but certainly we are able to now control our final theta angle. We're looking for approximately 45 degrees. In this case, we can use our bar for an angle, or we can simply aim our screw port directly toward the ceiling. Alignment of the patient on the table is what we're going to use for to determine our anteversion. Right now the cup is in what I would call neutral. And we'll simply move forward just about 5 degrees off of that.

Do you change your position at all for a male versus a female patient?

I don't, I don't. We'll drive our cup into a finely seated position, remove our inserter. I'll check for final seating, utilizing the tip of an instrument through the drill hole and see if I'm fully seated, and indeed I am. Can I have the drill. With a trabecular metal component that seats nice and tightly like this, a screw is probably superfluous, however it's become my habit to place a single superiorly placed dome screw in these cups.

If the patient has very rigid bone, do you at all over-ream one additional millimeter to get this component to seat, because this is a 2-millimeter press fit, correct?

Indeed, at the rim. It's an elliptical cup so that the apex sits aligned to line fit. And yes, indeed out at the rim it gives us an additional millimeter of radius. If I can -- if I pound on the cup and the cup simply bounces on the mouth of the acetabulum or doesn't fully seat, indeed we will ream up. You got a 30 screw please. The screw we're going to use today is not to "hold the cup in" or provide additional stability, it's simply to provide rotational stability that I think is necessary as we do our final reduction. You certainly can load this, the edge of the socket, for a moment quite eccentrically. So the screw doesn't necessarily have to be terribly long. In this case we'll use a 30-millimeter screw.

Just kind of an anti-rotation screw.

That's exactly correct. And a nice good bite. You got a 36 neutral?

Now are you going to be using the real acetabulum liner or a trial liner?

No, we'll move forward with the final liner, owing to the fact that my cup is well positioned. It's the size cup that I actually had planned on in my templating. And this will allow us then to use a pretty standard non-elevated liner. If we need to tweak anteversion or retro version, the nice thing with using the stem that we have today is that we can accomplish that through the stem and don't need to do it here. Come on out.

So if, for any reason, you need to accommodate the total anteversion of a total hip replacement, because you're using the connective, you feel that you can do this directly on the femoral side and not need elevated or different liners and can go directly to your original or your planned liner?

Quite true. We'll tap our liner into position. And I'll check that our locking mechanism is closed and moves freely and any hitting of the cup is nice and seated. Okay, come on out. At this point with the acetabulum completed, we'll move onto preparation of the femur. You noted that this, once again, will extend the femur and externally rotate it. We'll place the foot in a bag, a sterile bag back here. Initially I'll -- got a little bleeder here that I'm seeing -- we're going to place a standard neck elevator at this point underneath this neck. There you go, Kimmy.

Any problems with very muscular or very heavy patients?

Generally not. The key to this operation seems to be if we can get a nice long femur that we can then extend an AD duct, helps us gain good access to the working on the proximal femur. The downside on some of these, if we have very muscular, very short-thighed people, then it can be difficult to mobilize the leg. So with one retractor now underneath the neck I'll place a second retractor over the top, over the tip of the greater trochanter. I'll let Denton AD duct for us a bit. Place a very small retractor behind the neck here.

Which retractor is that that you're using there, the third one?

We call it a little number one. It's just a very tiny vent Hohman type retractor.

Can you show us the retractor? There you go.

See that? We can clean up here a little bit. Let's see a heavy pickup. Now today I've got pretty good access into this proximal neck at a pretty good angle. If I'm having difficulty getting this leg AD ducted, almost always it's due to a very tight portion of the capsule which inserts on the top of the acetabulum. This is not the adductor, it's simply the capsule. And I can split that. See how that retracts in a pretty aggressive fashion. And indeed, we can continue that release around the posterior trochanter, even onto the posterior neck in theory, as needed.

Can you show that to us one more time, point it out to us? We didn't really get a great view when you were releasing it.

Yeah, it will be a little difficult to show you here, but I'm working right now on top, directly on top. And this is the last bit of residual femoral neck that's been left behind. And all I'm doing is trying to remove the last bit of tenuous capsule that's been left there. This retractor is actually over the tip of the trochanter. What I'll do now is use a cookie cutter type of osteotome to remove this last bit of neck and gently gain access to the initial portion of my intramedullary canal. I'll then use a blunt type of canal finder -- because I certainly don't want to perforate -- to find my canal in a final fashion.

Any special tricks you use to align this with the extremity so that you don't perforate?

Well, the nice thing is is that we certainly have a nice view of the femur and we have -- with a nice long instrument, we tend to be able to align that with the femur in both planes quite easily, all right. This blunt retractor should pass very easily. If it doesn't, we'll tend to do a bit more capsule release. We'll tend to reposition our leg until we can very comfortably ascertain that we're in the acetabulum -- I mean, excuse me, in the intermedullary canal. We'll then start rasping. These are the rasps for the new connective system. They're diamond cutting and they cut in both directions with two sets of teeth and are relieved, both medially and laterally, proximally so we don't create a lot of AP channel. I'll tend to start with a very tiny rasp and we'll work our way out.

Do you start with the smallest size rasp?

The smallest size rasp, I believe, is a number four, which is very tiny. We'll start with the smallest standard rasp. This is a five. This is a six today? What you'll also see is the rasp handles are bent. And the nice thing is that really allows us to get that rasp down on plane. And these nice handles feed the rasps into the wound very nicely without putting extra stress on the soft tissue. From our templating, we know that the final shoulder of the rasp we'd like to be approximately 2 to 2-1/4 centimeters down from the tip of the trochanter. The nice thing about this operation is that, as I place these rasps, I can always visualize the shoulder of the rasp. I can always visualize the tip of the greater trochanter. As we advance these rasps, once they advance to the top of the rasp, stop. We don't want to drive the entire handle of things down into the femur and necessitate or give us the possibility of fracture. So if this passes easily, we'll simply move up to the next size. Actually, let's skip. That rasp passed very easily in size 6. My final templated size is a 12 -- 12.5. Therefore, we'll skip one rasp here and try to pass a 9 rasp. No? Initially

these rasps should feed into the intermedullary canal very easily without pounding and only after that -- let's go up on 1 now.

I've noticed that when I also use this system, that when you go to a next larger rasp size that if your rasp doesn't feed to within about 3 centimeters, just easily in to the stem, you probably need back down a rasp size. Have you found that also?

Absolutely, absolutely. And the nice size about these is that every rasp is effectively the same size, they just grow proportionally so that if I rasp and decide that I should have stopped with the one prior because I can't get this rasp fully seated, I haven't done any damage and I can simply go back down with the stem that's the size of the rasp smaller. And that stem will have the same size. It will simply fit more deeply within the femur.

How far would you let this rasp counter-sync into the femoral canal before you sized up?

Only to the top line of the rasp here. There's also a hole that they've done and placed in this for extraction. And the nice thing about that hole is -- for our colleagues that do invasive procedures where they can't see the rasp, they're doing them under fluoroscopic control -- that hole is easily visible. Once the rasp plunges far enough that the hole gets in line with your osteotomy, it's time to move up to the next size. Perhaps you heard that rasp start to change tones, which means we're nearing our size because the rasp is starting to get tight. I still think we could move up one more.

Now are you adjusting your anteversion at all in this?

At this point, I'm following the natural anteversion of the neck, and allowing that rasp to take its most natural course. The nice thing about doing this with the connective system is it allows us to put the largest stem in to the best position, giving good fill here, and then if indeed the anteversion of the neck and the final position of the stem appears to be a little different than what we want, the versatility of this system will allow us to build in anteversion or relative retro version on top of a previously placed stem. Okay, this is now nice and tight. The stem is seating to its full depth but not over-seating.

Can you show us that position? We really can't see where it's seating in the -- yeah.

See if we can do this a little bit. Okay. The stem is essentially fully seated here. You don't want the collar to get down inside.

John, can you put an interior retractor just down at the base of your wound for the camera?

Where would you like us to put that?

Just at the inferior portion of your wound just to retract it. There you go.

Does that help?

Yeah.

I don't want to pull too much and injure a muscle here. Okay. And with that stem fitting nice and tightly, here's the tip of my trochanter. Here's the shoulder of my prosthesis. And do we have a ruler? Now have you got a scissors? Yeah, just nip off the tip of this ruler so that we go a zero. And I can set the ruler down on the shoulder of this. And at this point, we're at about 2.5 centimeters, which is right approximately where we wanted it. So this is the stem that we'll use. And once again, if the stem feels the progression of our rasp moves along nicely, we end up with a stem size that's largely what we wanted. The stem gets right at an appropriate seating depth. At this point then I'm very comfortable and I will not proceed with trialing off of the rasp. However, with the rasp seated, we can easily leave the rasp in place and build up the trial necks and trial heads to find our final stability and length. What we'll do instead is

we'll simply place the final stem and then, once again, the versatility of this system will allow us to use trials at the level of the neck and the head to find out final position and stability. Yep.

So you are basically very comfortable not only with the fit of the stem after the rasping, but also trialing with the true component in place with your head and neck options?

Indeed. We templated for a 12.5, we ended up with a stem that's only one size smaller than that, which is within our range of error on templating. So we're very comfortable with this.

Now, once you put your real stem in, your true component, are you going to modify your choice of the head and neck because your stem size is what you actually templated?

Perhaps not because my final stem seating height is identical to what I wanted. And ultimately, whether the size of the stem changes or not for fit and fill, the final seating height of that stem is what's most critical in determining whether I need to -- my stem's a little high and I need to shorten my thoughts of the neck length or my stem is a little tall -- excuse me, a little short and I need to add neck in order to fulfill my templating requirements. We have our stem? Here's the connective stem. It's a --

Can we get a close-up of the component?

It's a bi-taper design, which is proximally plasma sprayed. The very nice thing about this stem for use in minimally invasive surgery is that I don't have the neck and the trunion already built on so that the stem can very easily be passed into the wound and down the femoral canal. We'll let that stem come to a pre-seated position and then simply tap it gently until it stops into its final position which corresponds with exactly the same position the broach was in, indicating that we're in good position. As we now begin to trial, I'll always start with certainly a full size smaller, shorter neck line than I presumed that I would use and the fact that I want this reduction to be very easy. I can then determine if I need to go up a size by looking at our tissue tension in the hip. And I generally know that I'm going to go up a size from our templating. What we don't want to do is force a reduction with a neck that is too long and then struggle to get the trial components dislocated once again. So let's have a minus 4 and a neck that, yeah, we can stay right here. That's good. All right. And do we have a head?

Now which neck trial did you select for this patient?

This is a neutral neck. Can we see that? It's not anteverted within the neck. It is a standard neck as far as neck angle goes. And on top of all of these, we'll simply use a zero head. We won't add neck length or subtract neck length at the head level at all. We'll try to accomplish that in this system through use of the trial neck. I'll tend to pre-assemble these.

I notice this was a gold band, so this has no ante or retroversion built into the neck trial at this time, correct?

None whatsoever. And I don't know if you can see what I've done is assemble the trial within the final stem. Come on out, come on out, everybody. I'll remove our retractors now. I'll simply place my thumb on the head, let this leg come back into a more neutral position and see if we can effect a relatively easy reduction with no other pressure than what I exert with my thumb. Just see here now is our final construct: stem, here's our neck, head and here's our previously placed acetabulum. Now the benefit of this procedure is with the capsule posteriorly and anteriorly intact, we can begin to use a shuck test -- go ahead -- to see if our tissue tension looks reasonable too, okay. There you go. And Dent can just slightly dislocate that hip, sublux that hip, and with just a slight bounce will feel nice and comfortable. But actually this, this reduced neck length, is appropriate for this case. Come on out, Kim.

Now what would cause you to choose a greater offset or a greater leg length than what you currently have?

Generally, I'll try to make those decisions preoperatively. If I can look at my template and tell that I have a very tall Valgus neck or a very short angle, perhaps 125 degree Varus situation, I'll tend to immediately start to make that in my trial construct. Likewise, if I determine that we have very high offset, will tend to immediately try to mimic that in our trial construct. Interoperably, I think it's very difficult to determine whether you need more neck length or a different neck shaft angle and/or determine offset. I think those things have to be determined preoperatively. Now, interoperatively, we can change our relative anteversion by using different necks within this versatile system to affect stability. So here we have a very basic situation. Here we have our hip relocated. You can see that our medius here is completely intact. We come in and these hips tend to be tremendously stable. Always remember through these relative anterior approaches that we need to check our hip at extension and external rotation as well, check for stability. So we're pretty happy with this one. I'll replace this posterior retractor. We got a bone hook? Put a bone hook around the neck. Give mean little tension down. We'll dislocate our hip and we'll disassemble. So this is a 36 millimeter plus zero head. And let's go with a glass head on this gentleman, okay.

So your implant trial neck is a what letter?

It's an "E."

And you're going to actually implant a --

The same one.

Same one.

We're going to stick with this same one. I was very pleased with this construct with respect to tissue tension, final height of our stem and stability.

Now this trial does not have the bump, correct?

This one actually does have a bump -- does he. But the stem's the same either direction on this one.

Okay.

In most of these it's very important, especially if we're using one that has any changes whether it's a higher neck, a more Valgus neck, a more Varus neck or it's anteverted or retro version that when we trial, we trial with this little bump that's present on one side but not the other so that when we put in our finals, we're not putting things in exactly opposite of what we intended, right. Because one could see perhaps in this neck that this neck could be used to take perhaps 150 degree neck shaft angle, but if we turn it over we turn it in the exactly opposite situation and perhaps just 125 degrees. So it's critical that every one of these that you trial with the nubbin up so that, as you put your final components back together, you're getting exactly what you trailed and not something completely different. Okay, let's have that neck. And what we do with these is try to assemble the entire construct -- give me a bone hook, ah so -- and then we'll impact and finally seat it all at once. Let's have an impactor.

So technique-wise, you don't impact these separately, you just do -- assemble and do one basically impaction to assemble neck as well as head.

Indeed, indeed. Take one final check of our acetabulum, make sure that's clear and let's reduce that. Okay. Here's our final reduction. In this case, we've used a Biolox ceramic femoral head against a standard polyethylene in the fact that this is young, active heavy 60-year-old gentleman. Okay.

So you're using a large head with very slim tapered head and neck combination, so you feel that your impingement and levering should be actually --

Very low.

Very low.

Once again, once we've accomplished this, I'll replace this posterior retractor not one layer shallower, indeed now extra-articularly. And you'll see that the flaps that we created with our initial capsulotomy are still intact both anteriorly and posteriorly. We don't need this capsule for stability but simply to make sure that the flaps stay where they belong, we'll put in a single heavy Tycron stitch -- got a pickup -- and tie those flaps back together again.

Generally when I repair the capsule, I find that if I've misgauged my leg length or my stability in my anteversion, my capsule will not close nicely.

I think that that's a very good indicator. Sometimes in these with thick, heavy capsule, sometimes if the capsule gets in the way of the operation too much, I'll excise pieces of the capsule or do a complete capsulectomy here of these two flaps. As I don't think that superiorly here they contribute to our anteversion at all. We've now closed the capsule. Once again, we'll simply allow the muscles to re-oppose themselves. Do we have a dreg?

Very little trauma to your medius there.

Exactly. And generally a minimum of bleeding in these cases. I'll simply place a drain underneath and through the lateralis and we'll just place a drain right on top of the capsule here. We'll plan to remove that first thing tomorrow morning.

Post-op rehab for this patient, immediate weight-bearing?

Absolutely -- let's have a sponge. He -- if we can get a little cooperation out of our therapy department, he'll spend two hours in the recovery room and then head upstairs and immediately begin his therapy in a weight-bearing as-tolerated fashion.

When will he go home?

Come on over. Depending on how he feels and the reports from therapy, he'll either go home tomorrow, or if they feel he needs another session, I have no problem keeping him that second night and sending him home the following morning.

So your patients generally are going home, not to rehab, and within a day or two of surgery.

Absolutely. Normally our rehab placements, quite frankly, are much more social placements for some of our older patients who live alone and really have no place to go other than that. All right, now we'll simply close our rent in the tensor.

What about your post-operative limp?

Excuse me?

Do you have a postoperative limp?

When a case goes like this and there's -- I don't see really that we've involved any of those branches of the superior gluteal nerve, and when we have virtually no embarrassment of all at the gluteus medius, I would anticipate that this fellow will not limp honestly at all. He'll certainly be sore in this incisional area, but generally he'll walk right away from this.

Well, John, I think we're just about done here. I'd like to thank you for letting us join you in the operating room. And that's really about it from here from Tucson, Arizona. And thank you for joining us for the Webcast.

Absolutely, certainly our pleasure to have you all today. We'll put this last stitch in the tensor and then we'll let Kim finish with the subcutaneous tissue. We'll use some small staples in the skin, a light dressing and we'll let the patient head back to the recovery area. Thank you for attending and hopefully you will see the benefits and the advantages of the new Zimmer Kinectiv System. Thank you.

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