

[SIDE CONVERSATION]

SPEAKER 1: Little bit more. Yeah, about right there.

9, 6, date of birth 7/1/52. Here for prostate brachytherapy with plating dash 103, and space OAR injection.

Just getting all my pieces and parts together. Skinny little mini, but that's why this product was so good for him, I thought. Because he's just not going to have any space between the prostate.

SPEAKER 2: Yeah.

SPEAKER 1: OK, lube me up. What do you got on the clock? Let's call this a start time.

SPEAKER 2: 8:34.

SPEAKER 1: 8:30, sorry-- 8:34, probe in. Yeah you can see he does not have hardly anything for fat between. There's my [INAUDIBLE], there's my base. Looks like we're pretty close. Let me see your image versus my image. I want to see your contours, and I can match to you.

What we're seeing here is the contours from his MR plan superimposed on the live ultrasound. So I can see the prostate is pretty close to where it's supposed to be. I want to adjust that just a little bit on this slice to get the ultrasound right where it's at. I'm going to set my zero here. Bill, you ready for me to step back and look? There's my first slip back, can you step back one? OK let me take my prostate up just a little bit.

And that's [INAUDIBLE] I see on it. OK, let's go back to the next one. That looks pretty good, good, next. I think that'll get coverage. We may tweak the apex out, go back one more. OK, now that's OK. For the most part it lines up, it looks like the alignment's off just slightly. We'll capture new images on the prostate, I think. I think I'll have to adjust-- I can use those lines actually, because I can just move and adjust, and then we'll adjust the plan.

Now I'm going to flip back. Now it's going to track with me. The encoders that are buried in here are tracking with me. You got that one captured, right? Next, capture. Next, capture. Next, capture. Next, capture. Next, capture. Next, capture. Next, capture.

Take that one twice for me. Or do you want me to step back one more and grab a blank?

No, you're fine.

And if I step back, then I'm seeing that I'm out of prostate. So I've got images, I've got a plan. Now I'm going to sit down and tweak that plan out, and then we'll do it, and then put the applicator in.

And you've got your contours unlocked, I'm going to go over here to contour and we'll go up to the top. See he's purple, I see him.

SPEAKER 2: OK.

SPEAKER 1: So now let's change the color on this guy and see what color he turns. Let's make him Spring Green. And the reason we do that, you see this 9p PI-RADS 4? That's telling you, if you go 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12. 9 posterior, there's a lesion that they saw on the MR that they said was-- our PI-RADS rating was significant for risk of cancer. So we've brought that into the planning system, now we're fusing that in the ultrasound.

We're giving 150% dose to the molecular target that we see on MR, and then fusing that with the live ultrasound to make sure we've got it in the right location.

SPEAKER 3: Yeah, I haven't seen a brachy case since I stopped selling for [INAUDIBLE], which was about 2011.

SPEAKER 1: Well, even if you go anywhere else, you aren't going to see this. But it looks normal ultrasound, it's only on the MR that you can see that target, and so--

SPEAKER 3: Yeah, I can see that. So basically you're going to paint more, you're going to--

SPEAKER 1: Put more dose in that area.

SPEAKER 3: Okay, gotcha.

SPEAKER 1: And since it's close to the rectum, I give it 150% of the dose, that's right in the middle where I wanted the space OAR product to lift away. This is a fairly new planning system.

SPEAKER 3: It's MIM, right?

SPEAKER 1: It's the MIM's-- what they call their symphony planning system.

Yeah, now I can take out that PTV, shrink it down and say, OK let's put the PTV back in. I'm going to take my PTV out, I'm going to take my prostate out, I'm going to take my urethra and drag it to the right location. We'll put prostate back in.

And the ability to do contour planning based on contours. You know, and to bring in image fusion. Where MIM has been doing that for years, Varian's product isn't that far developed yet. Now these edges look a little funny. See how they look jaggedy because we transferred them over from MR? If I hit the smoothing a couple times, that smooths that out for me. And my PTV, again I think I could take that down a little bit to spare some of his rectum.

Well I can see the edges of the contour. This contour was from MR, it just transferred over. I'm just adjusting this to match visually where I see it on the prostate. So like on this slice, I can see my prostate's out to here. So now I'm going to take my prostate and I'm going to turn the contour back on the tool, and I'm going to push that edge out.

SPEAKER 4: [INAUDIBLE]

SPEAKER 1: Right. So this is really customizing the implant for every patient to account for the best of all worlds. I'm getting the molecular imaging to show me where I should be covering, I'm looking at the live image and the ultrasound view as we're doing the procedure.

SPEAKER 5: [INAUDIBLE]

SPEAKER 1: Right.

SPEAKER 6: When did you start to use this?

SPEAKER 1: About two years ago. We published at ABS couple years ago, but the first experience with it-- an abstract anyway.

SPEAKER 6: [INAUDIBLE]

SPEAKER 1: Collecting a series so we can start reporting this out in a retrospective fashion for manuscript publications. I think we can say safely that we've got one of the most advanced programs in the country at this point.

SPEAKER 5: Oh, that's great.

SPEAKER 1: I mean, I think MD Anderson's doing something very similar. They're doing some interesting work with parametrics.

SPEAKER 3: [INAUDIBLE]

SPEAKER 1: I don't think anyone else is-- well, I don't want to say I don't think anyone else is doing it. I don't know of anyone else that's doing it.

SPEAKER 3: [INAUDIBLE]

SPEAKER 1: They do all the work to get all these computer images in for me and do a pre-plan so we know how many seeds we need to order, and then I, usually in the operating room, like to set down myself to tweak out the plan. Just to make sure before I do the plan that I'm perfectly happy with what I'm about to do. Because I purposely made this a little bit more complicated than other people think is required for brachytherapy. Do I think it's a value to the patient? I do, or I wouldn't be taking the time to do it.

You can see the brown rectum that's there is the one that was drawn from the MR. So now I want to take it down to just one scene on ultrasound, basically. And put it right up against the prostate to look and see what my dose is here. Now what will be interesting, of course, is to see when we're done with this whole procedure and we push it back, what dose did we get to the rectum after the procedure's done.

So what we're looking at on this screen is the prescribed dose of radiation in green, the prostate's in blue. The target volume, accounting for any disease beyond the prostate, is in red. I'm letting my dose drop a little here because this is the pubic bone. There's no cancer going in there.

We've used an MRI image to see that there is an area here that actually was high risk for being cancer, what they called a PI-RADS 4, so I'm pretty confident there's cancer in that little square. He's only a half a centimeter square. But I want to make sure that my 150% of prescribed dose is there, so if one or two seeds moves away from it, I know I get at least full dose there.

I'm shooting to get 99% coverage to the blue. The 150, this flesh tone, I don't like it to be above 70%. I want it between 40 and 60. By using the molecular imaging and the MRI, it let's make sure I get very high doses where the cancer is likely to be involved, but decrease dose to the neurovascular bundle, urethra, and again in this particular case we're trying to spare the rectum because the patient's on a blood thinner.

Now what I see here is I've got a seed and it's got a single-- and that's this guy here, so I'll go find where he's at and say, I don't need him. That's a needle I don't think I need, I'd rather add it there. That's a needle I'm not sure need to have a seed, and I think I'll put there. And then that one I can drop out.

So now I've got a plan that I think I'm almost happy with. One last look at the needle loading pattern, and now I've eliminated anything other than threes in a row. I don't see any signals. I got a couple. These are across the top, that 4.5. So where I got rid of needles, these seeds are more prone. If you're going to see 2% migration, it's going to occur in here. So I don't mind putting those back to back because one of them may not even stay there. And there's nothing other than bone that it's close to.

SPEAKER 3: Gotcha.

SPEAKER 1: OK, so the top one, let's go up and take big dog 2 as our first needle. OK Bill, do you want to print everything off? I'll let you go from here. I'll start getting ready. OK, and I look like I'm below the urethra. I can take the needle tip on up to the top of the prostate. That looks like I'm all the way to the top.

Now I take this sharp piece out. I'm going to pull back here and go three in a row-- 1, 2, 3. And you can see Bill pushing those seeds to the right spot. And then I'm going to come back here. I want one more seed here. But now he wants three seeds back to back there, correct? So I'm going to put 1, 2, and the third one right on the edge of the rectal [INAUDIBLE], 3.

And there's my first needle. As you place the needles, you're going to get a little bit of swelling in imaging. If I went bottom to top, by the time I get up here it would be hard to see my image. If I start up here at the top and work my way down, I've still got good image at the bottom. And especially in today's case where we want good image of the bottom to make it into this plane to place the spacer. I want to start up here and work my way down. So now I'll go left to right, top to bottom.

So I'm going to come in right there to the top of the prostate. How many we putting in?

BILL: Two here.

SPEAKER 1: 13 and a half. So I'm going to come back to 11 and a half on my mic. That gets me about right here. A lot of people like the pre-loaded needles where you're just putting it in and then dropping the seeds like that. But if you do that, the only thing you've got control is your tip. And depending on how much wax you've got at the tip, you don't even know exactly where the tip is. With these, you always know the seed's five millimeters in front of the tip of the needle, and you can watch that last seed and adjusted as you're doing it.

Take it on up to the top. How many? Is this the other one with 5?

BILL: Yeah. 5 straight 5 at 12.

SPEAKER 1: One, two, and here's the problem, sometimes you can't perfectly see the seed. Three, four-- so you see Bill on the live screen over there, just trying to adjust for where I actually put the seeds in-- five. Big Frank is like, why isn't that on 1.5 big Frank? There it is. I'll take that.

How many are we doing here? I think about there. Two back to back at 12 and 11, 5 and click click, three, and out. 8, 9, 10 And you kind of push it in quickly that. And that just goes into that space, and they got about a second now, that's to be a solid gel.

SPEAKER 5: So if you touch that now it's solid? And that stays that way?

SPEAKER 1: And it will stay there for three months, and it'll absorb and go away. The first thing will be doing is placing the needle.

SPEAKER 5: Yeah, you'll do the [INAUDIBLE].

SPEAKER 1: I'm going to start by putting everything blue to blue and getting me set.

SPEAKER 5: [INAUDIBLE] will settle out.

SPEAKER 1: Right, and then while that's setting, I can get my needle in place. OK that's connected, and I'm down. Air out.

SPEAKER 5: And shake it for about 10 seconds.

SPEAKER 1: Product in. I'll just let that set for a minute. And I've got 10 cc's of sterile saline here, perfect. so now I--

SPEAKER 5: So you can do, prime your needle with the saline, just so you get all the air out of that.

SPEAKER 1: So it looks like if I go right here at D1, that's going to get me right below. I'm going to pull the needle back a little bit as I do that to open my space out of it. And that gives me my 10 cc's of saline that [INAUDIBLE]. I'm going to back in the middle and take my 10 out.

SPEAKER 5: Leave the needle at mid-gland, because that's where you'll connect to it.

SPEAKER 1: And then disconnect. Now I can pull this back in.

SPEAKER 5: Go back five.

SPEAKER 1: I've got five.

SPEAKER 5: Disconnect.

SPEAKER 1: Disconnect. Pull a cc of air.

SPEAKER 1: Now we build the rocket ship. One's on, the other's on, let's get these you over. I just-- I like it remember a lining these two up so they connect easier.

SPEAKER 5: That syringe clip holder next.

SPEAKER 1: Yeah let's see if we flip that over and that's going to go in, clip, clip.

SPEAKER 5: And then just hold your plungers.

SPEAKER 1: And then hold the plungers, and go clip, clip. OK there I am. Now I want to advance just to the point, not any further. Because I don't want to lock up my needle early. OK we're ready?

SPEAKER 5: Yeah.

SPEAKER 1: I'm connected.

SPEAKER 5: Beautiful. Very nice. Very nice. Excellent.

SPEAKER 1: Nicely done. Thanks guys We got very good separation on that.

SPEAKER 5: That's beautiful. Nice job.

SPEAKER 1: That's how it's done.