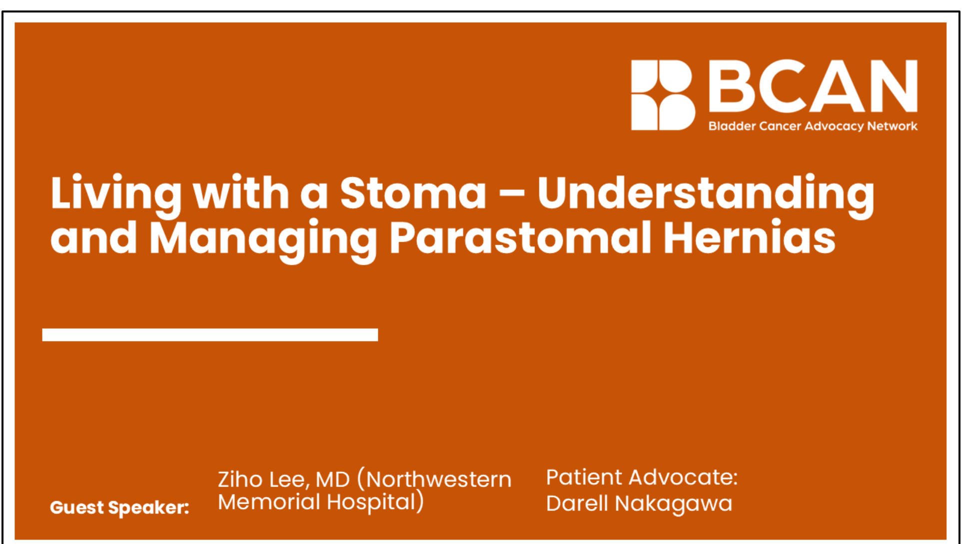
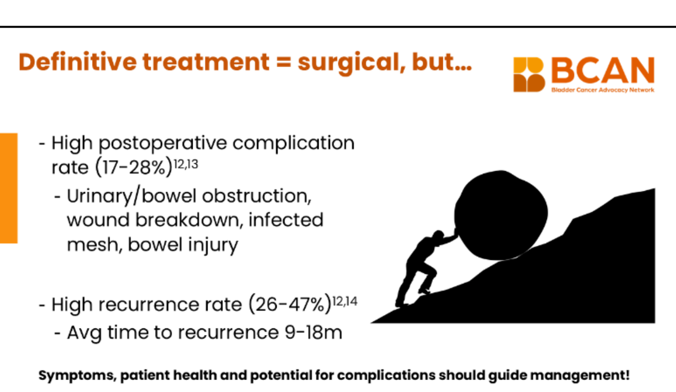


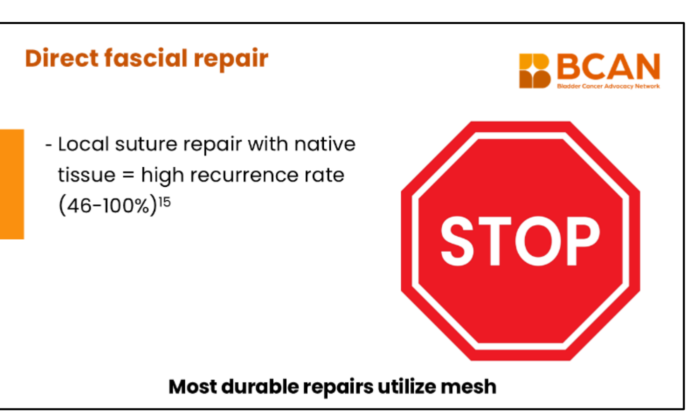
Dr. Ziho Lee:

So for me, when I make the decision to offer surgery, I really talk to the patient and really evaluate their goals. What are their symptoms? What's their baseline health? Are they really active? Are they taking care of the grandkids? Are they going out living very independently? Do they really want this? And then what are the potential complications? And so I really like to get to know my patients and really talk about, is surgery right for them, because it's not right for everyone.



Dr. Ziho Lee:

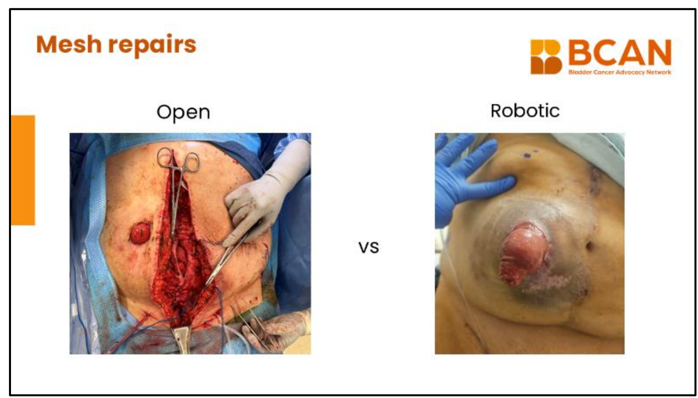
And so how do we fix this? I think for me, when I talk with patients about doing complex surgeries, I like to be as in depth as possible. I really want to give an objective overview because that's my job is to you, give patients a clear visualization and clear expectations on what to expect after surgery. So here, I just want to go over the different repair



types. I also developed a new technique on how I fix these, and so I will be presenting that as well.

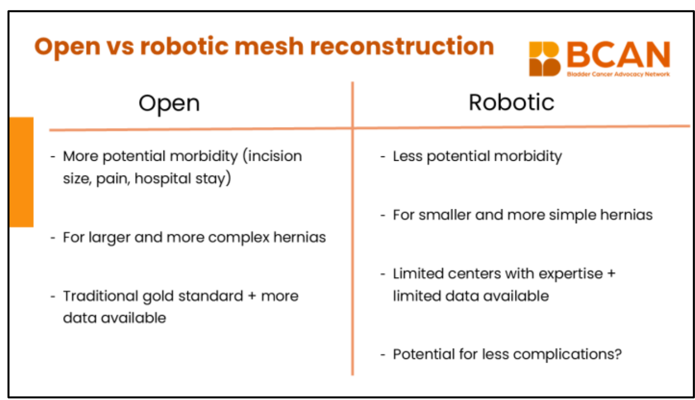
And so the first option is to direct fascial repair. What does that mean? That essentially means you take sutures, normal sutures, and you literally just stitch up that hole. That we just don't do anymore. And the reason is because almost all of them just recur. You can see here, recurrence rate, 46 to 100%. That's so high. That's so high that I wouldn't even offer this, right? And so based on the literature, we no longer offer this because we know that repairing it, just plugging that hole with some stitches, it doesn't work. And so most of the durable repairs or the repairs that actually work utilize some kind of mesh. And so there's different types of mesh repairs. So on the left, this is an open repair where you make an open incision.

Dr. Ziho Lee:



And so when I do open repairs, I usually work with a plastic surgeon to do these together. Nowadays, the ones that I do, I do them robotically. If you can see here, this is the incision that I use to repair parastomal hernia. The incision's about three to four centimeters in size. So I literally make a hole four centimeters to fix this and most of my patients go home either the same day or the next day. But if you compare left and right, all things being equal, I think the robotic approach really does offer unique advantages.

Dr. Ziho Lee:



So, when do I go open and when do I go robotic? Open, when we do open surgery, meaning that we make a big incision like you saw on that left side, there's more potential morbidity. Why? The incision's big. You can have more pain. Patients stay in the hospital longer. When do we do this? Typically, I try not to do open surgery in my practice. I will do it if it's needed or medically indicated, but I reserve this for larger, more complex hernias where maybe I'm not able to get the fascia together using mesh and using standard techniques, or if there's other complications related to the intestines.

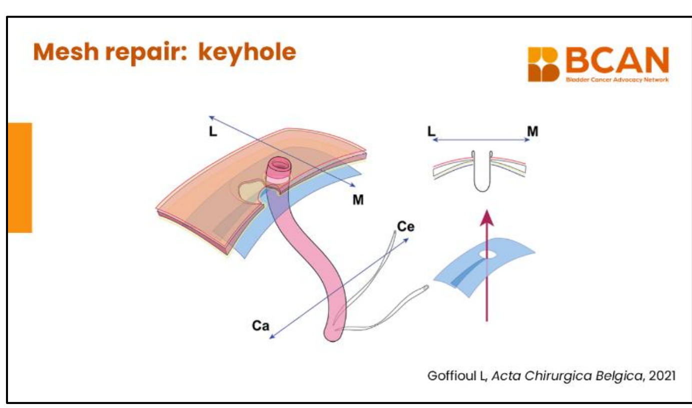
And so this is the open repair is something I do for larger and more complex hernias. This would be the traditional gold standard. There's more data available. With the robotic repair, it's less potentially morbid because we're making small incisions. Nowadays, I just do the

single three, four centimeter incision to access and do the surgery, which has worked really nicely for me. I use this for smaller and more simple hernias, and it's a great option. I would say majority of patients have these smaller, simpler hernias. The problem with the robotic repair is there's limited centers with expertise and there's limited data. And so there's not many surgeons offering robotic parastomal hernia repair, especially in the urology space. And so there's limited centers that may offer this.

And additionally, we're looking at our data right now, but is there potential for less complications? From a theoretical standpoint, yes, likely there's going to be less complications just because it's a less morbid operation, but obviously the jury's still out. And with the robotic approach, we're taking on smaller, simpler hernias compared to the open approach.

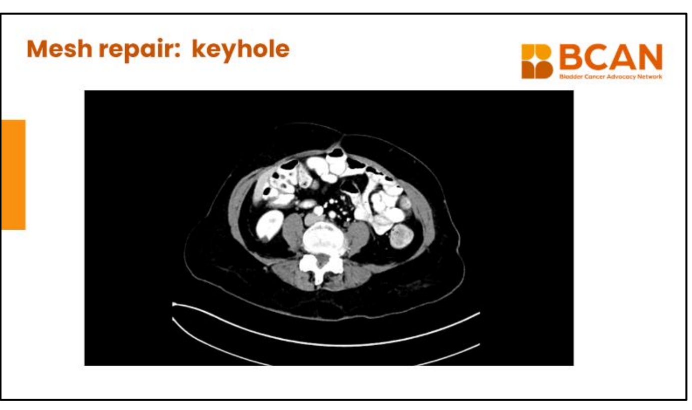
Dr. Ziho Lee:

So just really briefly, I did want to go over certain techniques because I think it's important for patients to understand how these things get repaired. The technique that I used to always do is something called a keyhole technique, essentially what it is, so this yellow tube or this pink tube here, sorry, is your stoma and this blue piece here is a mesh. And what you do is you make a hole in the middle of your mesh and you literally put the stoma through the hole and then you sew this in place. And this has worked nicely. There's a lot of data in the literature regarding this.



Dr. Ziho Lee:

I'm going to show you guys really quickly just a brief ... This is the stoma, so if you could see here, even without a big medical knowledge base, you can see ... So this white intestinal segments are in the stoma, so this is a parastomal hernia that contains a lot of intestinal segments. And so you can see, again, a lot of this white stuff is intestines that's stuck within this parastomal hernia.



And so this is me doing robotic surgery. So this is not where I place the single four centimeter incision. This is a multi-port robot where I make five dime size incisions within the abdominal cavity. Again, it is minimally invasive. Instead of making a single three centimeter incision

though, I'm making multiple eight millimeter incisions. But what I'm doing here is, if you can see here, I'm just orienting everyone, this is just intestinal structures. And what I'm doing is I'm just trying to clear off this stoma. This whitish clear object here, this is our stoma. And what it involves is just cleaning it off.

And you can see, I'm going to pause it right here. You can see here, so this is our stoma here, this piece of bowel going through. So we are inside the belly looking from the inside up to the patient's abdominal wall, the skin. And you can see here, this is the hernia right here. So this is after I removed all the intestinal contents and everything inside. And so what I'm going to do is I'm just clearing off some more intestines, so this is part of the bowel. I'm using scissors robotically just to remove all these structures. I'm going to clean off this ileal conduit here. So this is what transports the urine. And what I'm doing is I'm really clearing off a broad surface to allow my piece of mesh so I can do that keyhole technique where I take this big piece of mesh and I sew it in.

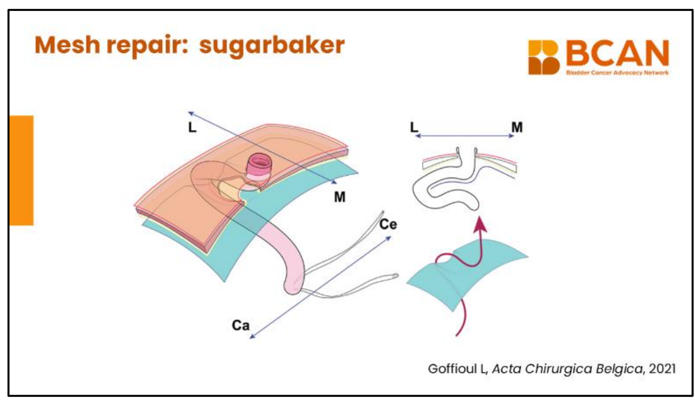
So first what I'm going to do is I'm going to take some barbed suture. So this suture is interesting, it's barbed. It's like a cat's tongue. It's smooth going one way and it's rough going the other way. And so when I'm pulling, it's smooth, but if it doesn't pull the opposite way, so it prevents the suture from loosening up because it's barbed and so it prevents that pulling back. And so this is a great suture that I use in a lot of my reconstructive surgery. But again, what I'm doing here, you can see that the hernia is closed.

But like I said, if I just use normal sutures, that hernia is going to come right back. So what do I do? The keyhole technique, what I'm doing is this is a piece of mesh, and what I'm going to do is I'm going to sew this piece of mesh on the inside. And so what it's doing is by putting this piece of mesh, we're preventing the intestine or fat from going into that space, and so it really reinforces that closure.

And so this was a great technique. This is the technique that I've really was my go to before I invented a different type of technique, but this is pretty much what I do. And I love this surgery because again, it's minimally invasive. I do it robotically, much less pain for the patient. Most patients are out either the same day or the day after, and so it's a very good option. And so this is surgery we certainly offer here at Northwestern.

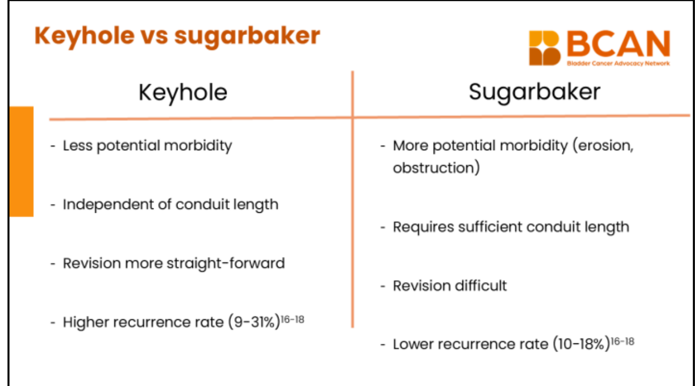
Dr. Ziho Lee:

What's another type of surgery? It's called a sugarbaker, just going into the weeds a little bit. So essentially what I'm doing here is, again, this pink is a stoma. That's where your urine's come out of. And what you do is you take a big rectangular patch this time. So you're not making that hole, you're not doing the keyhole, you just take a patch and you're literally just patching the piece of mesh onto the stoma and over the hernia defect.



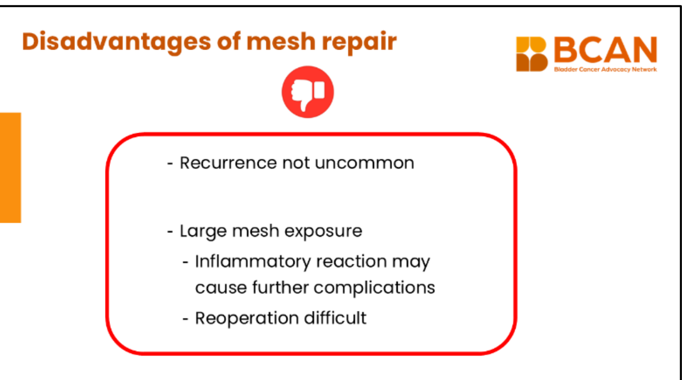
Dr. Ziho Lee:

I personally don't like to do that procedure because I think it can cause compression on the stoma, so I don't usually do it. But again, when we look at recurrence rate in the literature, it's relatively high, 10 to 30% for the keyhole, 10 to 20% for the sugarbaker. And so that's the technique, that was my go to for a very long time.



Dr. Ziho Lee:

And so what are some disadvantages of mesh repair? So for me, I really like surgical innovation. We have an entire division within our division of reconstructive urology at Northwestern where we look to develop novel surgical techniques. We also do novel medical device development in conjunction with our engineering colleagues at the Northwestern University. And so for me, a big passion of mine is how do we make surgery better? I want to be at the absolute forefront. I want to offer the absolute best care for my patients. How do we get there? And a big part of it is really pushing the boundaries of surgery and really looking at myself in the mirror and saying, "Well, I told you guys, it has a pretty high recurrence rate. So what can we do to make this better?"

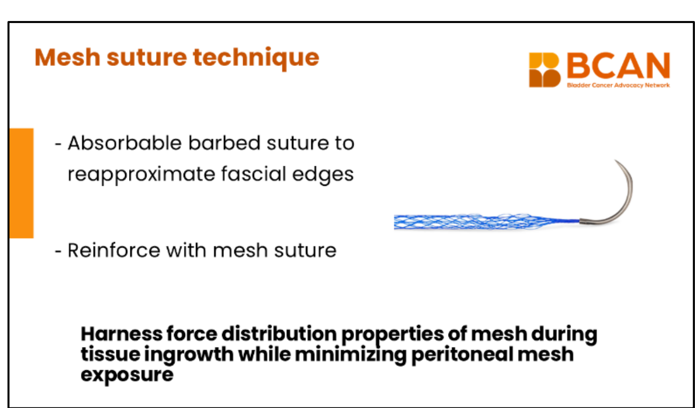


So with standard mesh repair, like I told you when I was doing the keyhole repair, recurrence is not uncommon. So about 20% will have recurrences. That to me, we can improve on that. I want to get better on that. I want to be able to offer a better surgery. And then what's another disadvantage is there's large mesh exposure. You saw in the robotic footage that I was showing you guys, there's a big piece of mesh that's on the abdominal wall, and that's just exposed to your intestines that can cause inflammation, it can cause complications. Not to mention in my practice, I do a lot of revisional surgeries. So a big part of my practice is doing surgery and patients who've had surgery 2, 3, 4, sometimes 20 times. And so when I go in there, there's always going to be a lot of scar tissue, but this mesh will make that scar tissue exponentially worse.

And so in my practice, I was like, well, these patients with large mesh exposure, it makes the operation hard, alright. And so in my mind, I really had to reflect and say, "What can we do? How can we make this better?"

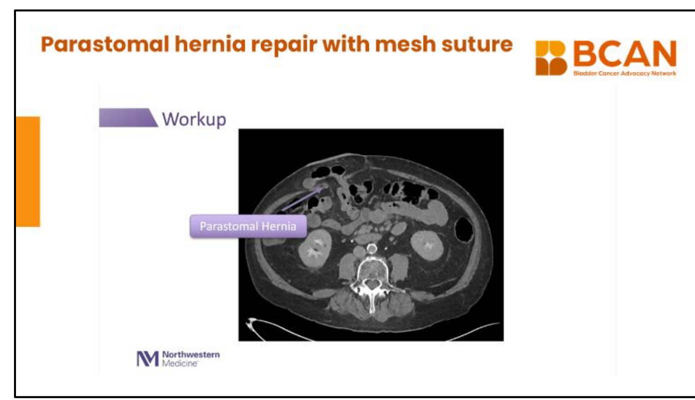
Dr. Ziho Lee:

And so I developed this technique, I call it the mesh suture technique. Essentially what it is, it's a suture, but it's a piece of mesh on a suture needle. And so what it is it has all the tissue ingrowth properties of the mesh while minimizing the footprint. This suture is much smaller than using that big sheet of mesh. And so because of that, my hypothesis or the idea was that, well, maybe by using this, I can either improve outcomes for my patients, but also make it so that complications related to mesh and reoperation afterwards is more amenable. And so the way that I do my technique is, again, I use that absorbable barb suture to kind of close everything shut and then I reinforce that with a mesh suture. And I'll show you a video of how it is.



And so the reason I think this works is that I harness kinda the forced distribution properties of the mesh during tissue ingrowth, and I minimize the mesh exposure. So what I'm trying to do is maximize the advantages of this mesh while minimizing exposure and complications related to the mesh.

Dr. Ziho Lee:



And so if we can see here, you can see there's a hole here, this black and white structure here, this is another piece of intestine. And so this is a patient who has intestinal segments inside the hernia. So I'll be very brief here. So this is a case where I'm using the, we call it the single port robot where it's just a single incision. It's that four centimeter incision that we use. And what I do is I'm drawing all of ... This patient had a lot of fat. I think I had already removed the intestinal contents, but we're getting all kind of the fat out of this area. And again, what we see here on the left side, this is the stoma.

And you can see here this hernia right around, this big hole right at the top here. And you can see how intestine and other bad things can get stuck in there. And so again, what I'm going to do is I'm going to use my barbed suture just to bring all the tissues together. And so this, again, works nicely because I can close things very tightly and there's a minimal risk that the suture's going to loosen up, but this I do just to get the tissues close together. And then after I do this, what I use is I'll use this mesh suture as you can see. And so essentially it's literally a suture made with mesh. You see these pores, these pores are why mesh kind of works.

And what's great is the exposure of the mesh, it's not that big sheet of mesh that we see. It really minimizes the carbon footprint of the mesh. And so that to me is a big win in my mind. And again, it's just an easy suturing through, tighten things up, and we sew everything in place. And I really like this surgery. This is how I do 99% of these now, the ones that patients who come in and see me. And so this is something that I found to be quite successful thus far. Again, it is a novel kind of newer technique, so I'm still following my patients, but I've been very pleased with the outcomes thus far.

Dr. Ziho Lee:

Conclusions

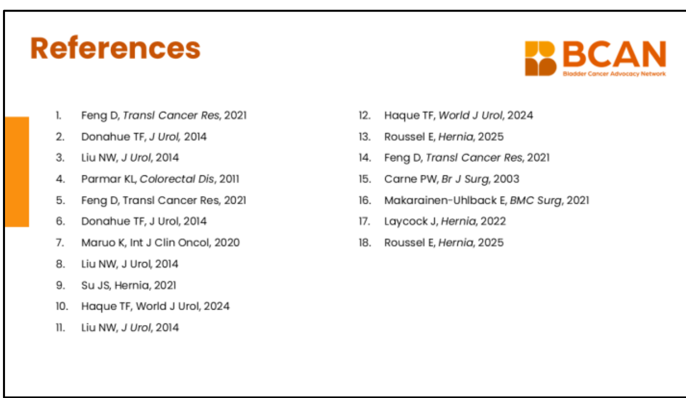
- Parastomal hernia is common after urinary diversion
- Reconstruction is difficult and associated with high recurrence rates
- Mesh suture repair is simple and may minimize mesh related complications

So in conclusion, parastomal hernia is unfortunately common after urinary diversions, especially ileal conduits. This is a big problem for patients. You could have problems placing the stoma bag onto your abdominal wall. You can have pain. And also it can lead to life-threatening complications like bowel necrosis or strangulation of your intestinal segments. Reconstruction, it's difficult and associated with high recurrence rate, also has a significant complication rates.

I do think when possible, I always try to recommend a robotic approach, just in my hands, I find that patients are much happier after surgery, a lot less pain, and a sooner return to activity. Because for me, anyone who's a bladder cancer survivor, it's like everyone else. I mean, you just got to enjoy your life and my job is to do what I can and facilitate what I can to help you do that. And so I really think that this mesh suture repair is simple and may minimize mesh-related complications. It's something that I'm very passionate about. I'm continuing to try to improve the surgical techniques that we use to help our patients. And so I'm very happy with what we've been able to do here at Northwestern.

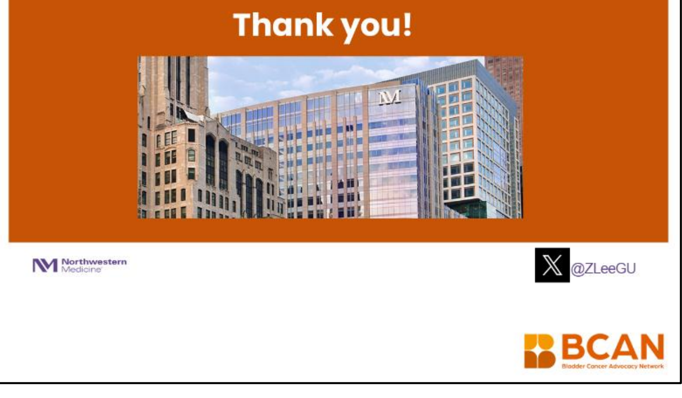
Dr. Ziho Lee:

So with that, I'll conclude my talk, here are some references.



Dr. Ziho Lee:

Happy to answer any and all questions. Again, I'm just super, super thankful for the invitation to present here. I'm also super happy that Darrell's here. He is one of my patients and is a big leader and advocate amongst bladder cancer survivors and it's something that I'm very proud of him and very supportive because education and patient education is just so important because that's how everyone gets better. I think having these open dialogues and finding out different perspectives is super important because if one person wins, everyone wins. And so I think this



is a great, great opportunity. And so thanks again and I'm happy to answer questions and then obviously hear Darrell's words as well.