Discussion to: The result of prospective evaluation of 3-dimensional-printing-aided extensive thoracoabdominal aorta repair

Presenter: Sun Jun Park, MD
Invited Discussant: Leonard Girardi, MD
Corresponding author: Joon Bum Kim, MD, PhD

Unidentified Speaker 1. Thank you, Dr Park, for this excellent presentation. Dr Etz had an emergency, so he isn’t going to be able to be here with us today, but Dr Girardi very graciously decided to help us with the discussion. Thank you.

Dr Leonard Girardi (New York, NY). Thank you, Dr Park. And as Dr Preventza said, we apologize for you looking up here and you’re seeing me and not Dr Etz. So, I apologize for that. Not having had a chance to review your abstract with any detail—I mean, your manuscript with any detail, I have a few questions, basically, based on your outstanding results. This is a great result, your incidence of operative mortality, spinal cord dysfunction, and stroke were markedly reduced compared with the other group and amongst some of the best out there, considering that these were all in high-risk step 1, 2, and 3 aneurysms. My question for you is, number 1, how long does it take you to prepare a 3-dimensional model like this? Obviously, that makes it a little bit more challenging in the setting of a symptomatic patient and certainly in the setting of a rupture. And how does that change your operative approach, number 1? And then number 2, how does the creation of a 3-dimensional model help you compared with just looking at a really good 3-dimensional computed tomography image, which is pretty darn good, at least from what we’ve seen? So, if you could just comment on those, that would be great.

Dr Sun Jun Park (Seoul, Korea). Thank you for your great questions. At first, it takes about 2 days to 2 weeks. But it can be adjusted according to the patient status if urgent surgery is required. We can request and then the aortic model can be obtained very speedily. So, it is not a bit harder for us to—for application this technique in the urgent cases. And the second question is—actually, in the initial phase of this technique, we had similar concerns about your point. It is really helpful for us to perform this kind of surgery. But when we had this, when there was a case, we performed the surgery without this technique. We found it very stressful to find the segmental arteries and if we did not have the confidence this level of segmental arteries are very important for the particular patients. So, we believe this technique can be helpful for surgeons.

Dr Girardi. You’re correct. Searching for intercostals can definitely be stressful. That’s a fact. But that brings me to my second question then, right? You make holes in the graft in advance, and you get in there and you have 1 of those stressful and lonely moments where you’re not finding anything to reattach and now you’ve got a couple of holes in the graft. So now what do you do?

Dr Park. Excuse me, I couldn’t. Can you 1 more time?

Dr Girardi. Yes. So based on your 3-dimensional printing, you’ve identified what you anticipate being the location of your segmental arteries, right?

Dr Park. Yeah.

Dr Girardi. And whether you use 3-dimensional printing or computed tomography with 3-dimensional reconstruction, you might find a couple of sets in that vital space that was alluded to between T8 and T12 that you might want to reattach. But now you get in there, maybe it’s a chronic dissection, maybe it’s a degenerative...
aneurysm, and that area that you had anticipated and were hoping to see 2 nice big intercostals that aren’t heavily back-bleeding despite a mean arterial pressure or a systolic pressure of 140 mm Hg, they’re not there. And you have now—you made a hole in the graft, right, based on the 3-dimensional printing. So, you already have made your openings in the graft, but now you look down and there’s no intercostals. So how do you handle those openings? What do you do?

Dr Park. You mean opening the main graft?

Unidentified Speaker 2. I think they sew the graft onto each of the openings.

Dr Girardi. There’s a side bridge already on the edge.

Unidentified Speaker 1. There’s a side branch there.

Dr Girardi. So you just ligate them.

Dr Park. Yeah.

Dr Girardi. Okay. Great. Thank you.

Unidentified Speaker 1. Dr Kasey has a question. It seems like.

Dr Joseph S. Coselli. Just a comment. Congratulations again, a great presentation and some great results. Because I have some familiarity with the graft that you’re using, I’d like to just make 2 technical comments. One that you stressed in your actual presentation and the other you demonstrated in your film. The first being that if you’re going to do this—and I think it’s a great idea and I agree you need multi-institutional data to kind of back it up, but you mentioned stretching it out a great deal before you proceeded with these openings. I agree. I think that’s extremely important. The other thing you showed was that the graft was dry, and you cut it with scissors. So, you hadn’t soaked it, and you hadn’t activated the gelatin. And so, if somebody’s so inclined to use eye cautery before they soak the graft, that’s not a good idea. It will inflame. Thank you.

Unidentified Speaker 1. Good comments. Thank you. [applause]