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DISCUSSION

Dr Hasan Dosluoglu (*Buffalo, NY*). Two quick questions. Did you have the data that differentiated between arterectomies as prior endovascular interventions versus others as contributing factors? And the second one, were prior endovascular interventions performed by vascular surgeons or other specialties and did it have an impact?

Dr Brian W. Nolan. Unfortunately, we do not have any information about the prior interventions. We simply know whether they had a prior intervention or a prior bypass. We do not know what type of intervention, be it atherectomy, angioplasty, stent, or anything else. And, we do not know who did those procedures or when. So unfortunately, while that would be very interesting and potentially useful, I do not have the answer to your question.

Dr John Jeb Hallett (*Charleston, SC*). Based upon the experience you have had in New England, we are forming a vascular study group in the Carolinas now. And the question comes up: Once you have this information, how are you using it in the study group to try to tighten up the variability that you demonstrated in peripheral interventions?

Dr Nolan. One of the focuses of our study group is to examine variability and the sources of variability. We are also, of course, interested in developing quality improvement measures we can employ to better the care of our patients. As far as what we do with the results of this study, first, it is probably most important for counseling our patients: Is PVI a free shot? Well, maybe not. Because whether or not a patient has a PVI first or a bypass, it looks like the outcome with the subsequent procedure is the same. Second, we have recently started a PVI database, so we will now collect the types of information that may help us answer some of the more complex questions about which types of interventions are more or less successful.

Dr Paul Bloch (*Portland, Me*). One thing that you showed is very interesting: Namely that bypass following endovascular intervention is at higher risk for failure. You showed something that we already knew, which is that a second bypass after a previous bypass is at a higher risk for failure than the first one. Interestingly, it appears that in this study, a second bypass after a prior failed bypass had a higher failure rate than a bypass after a prior failed endovascular intervention. Were those numbers significant?

Dr Nolan. No. In fact, there was no significant difference between. Actually, they are very similar. They both seem, in our analysis, to increase the risk of amputation, occlusion, or major adverse limb events by about 50%. And amputation was a little bit higher for PVI, but occlusion is a little higher for bypass. I think, for me, overall, the take-home is that they are actually very similar.

Dr Michael Silane (*New York, NY*). You must have had many other patients who had previous PVIs or bypasses that did very well. So aren't you selecting your worst patients and therefore they are going to have worse results than the patients who have not had a previous PVI or procedure?

Dr Nolan. That is a very good point. We do not know the denominator, so to speak. Certainly, in the study group, we do not, at this point, record all of our PVIs. As I mentioned, it is part of a new initiative. There has been plenty of successes with PVIs, and we are really just looking at bypass after a failed PVI and how a failed PVI predicts the outcome of a future bypass. So in a sense, you are right, we do not know all the people who were treated successfully with PVI. But for this study, we really were just concerned with the impact of a failed PVI on bypass.

Dr Christos Liapis (*Athens, Greece*). Do you have any information regarding the timing of the two operations? I mean, if it was immediately after a failed endovascular procedure or if it was a late event, like a couple of years later?

Dr Nolan. Unfortunately, we do not. I did not show the data form, maybe that would have been helpful, but essentially, it is simple checkbox data entry. We know the patient had a prior ipsilateral PVI, infrainguinal ipsilateral PVI, contralateral infrainguinal PVI, ipsilateral suprainguinal, contralateral suprainguinal. We do not know the type of intervention, timing of intervention, who did it, where, or anything else, we just know that they had an intervention.

Dr Maciej Dryjski (*Buffalo, NY*). I would like to congratulate you. This is a very important message you delivered. It is the first time it has been so clearly presented that when we perform endovascular intervention, we burn bridges for successful future bypasses. We still do not understand the reason for that, however, it is most likely a result of embolization. We have recently found that distal TcpO₂ decreases during, and immediately after, endovascular intervention on SFA and popliteal arteries. We do not see any significant clinical markers for embolization because it probably affects medium-size arteries in the pedal arch.

Dr Nolan. Thank you for your comments.

Dr George Andros (*Van Nuys, Calif*). For years, it seems that the venous papers attracted the greatest number of discussants, so I am pleased to see so many speakers for an arterial paper. Your manuscript raises questions about outcomes that need to be asked and answered. I would just limit my question to the simple question of patency: We know when, as Chris Liapis suggested, an arterial bypass occludes. You palpate it and it does not pulsate. All too often, we do not know when a peripheral intervention occludes, sometimes the patient do not get a foot pulse and we lack a clinical indicator for what is patency. Other than restoration of a

lumen as seen on angiography how did you decide that the PTA was successful and then how did you decide it was failed?

Dr Nolan. That is a good point. And it could be that maybe I misspoke in saying “failed.” All we know is that they had a prior procedure. And I guess, by definition, if they needed a bypass after having an intervention, then we would assume that the interven-

tion did not do what it was intended to do. But we do not actually have any hemodynamic information. It is possible that some patients, for example, had an SFA stent, but they still had tibial disease. The SFA stent was doing just fine, but they required a more distal bypass. And we do not know specifically that it failed, only that they had a prior procedure.