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Reflections on TACIT, what's next for CREST, and a close look at the field of interventional radiology.

TACIT is a three-arm trial comparing best medical therapy, best medical therapy with carotid artery stenting, and best medical therapy with carotid endarterectomy in asymptomatic patients. What is the latest on this trial?

TACIT is a valiant effort by a notable group of scientists who created the trial to answer the prevailing questions regarding revascularization or medical treatment of asymptomatic carotid artery stenosis patients. This remains the dominant question that needs evaluation as demonstrated by the Centers for Medicare & Medicaid Services's persistent limitations in reimbursing patients for stenting who have asymptomatic carotid stenosis. The bottom line is that asymptomatic carotid stenosis is probably the most prevalent form of carotid artery disease, and there is still uncertainty from existing trials as to the best mode of therapy.

We know from the recent CREST trial that both endarterectomy and stenting have acceptable results in this patient population without substantial differences in outcomes. This was particularly true for patients with asymptomatic disease. What remains to be determined is whether revascularization in general is preferred in this cohort over optimized medical therapy, which has been clearly shown in several recent trials to reduce overall cardiovascular and stroke risk, particularly with lipid-lowering therapy and angiotensin-converting enzyme inhibitors.

The TACIT investigators have been in communication with Tom Brott, MD, who is the principal investigator for CREST, and we are now working with his team to develop a trial that includes a medical treatment arm similar to TACIT and to share with them the original TACIT design as well as much of the methodology. Our hope is that the TACIT team will fold into a collaborative effort with the CREST 2 team to develop that meaningful trial.

Are you currently involved in any other clinical trials?

With regard to vascular disease, we are in the follow-up phase on the National Institutes of Health-sponsored CORAL renal trial under the leadership of Dr. Christopher Cooper and are evaluating those patients very critically. My group is also involved in the ATTRACT trial, which is evaluating deep vein thrombosis with clot management thrombectomy devices versus optimal standard anticoagulation alone; this is a very significant trial considering the prevalence and societal impact of deep vein thrombosis. We are participating in postmarking surveillance trials for carotid stenting, and we are also initiating participation in the TriVascular trial (TriVascular, Inc., Santa Rosa, CA), looking at a new low-profile endovascular aneurysm device. Lastly, we are looking at a new device for renal sympathetic denervation to treat hypertension, which is obviously very exciting for us.

What factors influence your decision to perform renal stenting after failed angioplasty?

For patients who have atheromatous renal artery stenosis (which is the great majority of patients that we treat), it has been well established by earlier landmark studies that these patients need stent placement for prolonged patency as well as clinical benefit.

In the early 2000s, we published that azotemic patients who have angioplasty alone have a higher rate of clinical recurrence, which is probably related to mild degrees of restenosis in association with "downstream" lesions from associated nephroarteriosclerosis and microcirculatory disturbance.

The reality is that all patients who have ostial renal artery stenosis from atheromatous disease are treated with stenting as our initial planned therapy, generally without an initial trial of angioplasty because we have not found these to be ineffaceable lesions. We can usually implant the stent and fully dilate it with no need for predilatation. The only exception to this strategy is patients with fibromuscular dysplasia. We routinely treat these patients with balloon angioplasty alone and avoid stents at all costs, using them only as an absolutely necessary bailout.

The Society of Interventional Radiology (SIR) recently issued its first global statement to define *interventional radiology*. How would you define this specialty?

Interventional radiology has been tarnished for many years by its inability to adequately describe itself and brand what we do because we do not own any particular procedure, device, or organ system. That was the purpose of SIR's global statement. Globally speaking, interventional radiology, especially using image guidance for minimally invasive interventional procedures, offers alternatives to open surgery. The mantra from SIR marketing is that the

(Continued on page 80)

(Continued from page 82)

procedures have fewer complications, less discomfort, and a shorter recovery time. And all of that is true.

I think the bigger point to be made is that to fully understand and define *interventional radiology*, we must look at subspecialization. Within our specialty, interventional radiologists have a particular focus on vascular disease and/or a focus on interventional oncology and/or a focus on women's health and imaging and so forth. Although we have maintained a general specialty, it is important to get people who have unique areas of interest who can sell themselves as subspecialty experts and grow the field in that direction.

It is hard to brand yourself as an expert in everything. It is hard to build businesses that way, especially in a private practice market. You need to be able to go out and speak about particular diseases and be an expert in those particular problem areas in order to have credibility and to be able to contribute to clinical science.

What are some of the biggest changes interventional radiology has seen during the last 5 years?

The old triple threat used to be somebody who was a good clinician, published a lot of articles, and was a good teacher. The new triple threat is somebody who is an academician, clinician, and businessperson. Some of the biggest changes in interventional radiology have been within these areas—particularly within the clinician and business arena. Certainly, academic interventional radiology has thrived and continues to thrive. We have some fabulous thought leaders in major institutions, but what we are seeing is a trend toward more and more interventional radiologists separating from the traditional role as part of a diagnostic radiology practice and moving toward performing longitudinal patient care, setting up clinics and/or office hours. Providing that level of clinical care is imperative for maintaining and defining the specialty.

On the business side, we are seeing interventional radiologists who are choosing a model of private practice either working at access centers or going out on their own, independent from diagnostic radiology, functioning like vascular or other subspecialty physicians to create a solo business. That is a model that I have embraced here with my own group. We employ dedicated interventional radiologists and operate now in several freestanding centers in which we are owners, as well as contract with several hospitals. I have been involved very aggressively on the business side of things. It is a model that I find is very appealing and one that many interventionists are seeking. There are numerous opportunities for interventional radiologists, and overall, this type of business savvy is one of the biggest changes we have seen during that last 5 years and is a trend that is going to continue to grow.

Where do you see future interventional radiology opportunities arising?

For interventional radiology to fully maximize its potential, we are going to see practitioners working in dedicated interventional groups, or perhaps within multispecialty groups with surgeons and oncologists or surgeons and vascular specialists including cardiologists, and less and less within the old model whereby we worked in diagnostic groups doing part-time intervention. As I have developed this model and traveled and talked at the SIR annual scientific meeting about it, I have found that this is really the greatest area of interest for young interventional radiologists and those coming into the field. Of course, it is supported by the fact that now there is a primary certificate for interventional radiology, reflecting the fact that interventional radiology has become a stand-alone specialty in which we can thrive on performing those procedures we do alone within but not necessarily directly as part of diagnostic radiology groups.

Do you have any credos you wish to live your life by?

I am very conscious on a day-to-day basis of maxims that guide me. I think they reflect how I function as a person and as an interventional radiologist. To be perfectly candid, I always had a fantasy that I would give the Dotter lecture at the SIR annual scientific meeting, and the title would be along the lines of "Clichés and Interventional Radiology."

There are some credos that I think are fitting. First of all, I like to say, "The tides advance, and the tides recede." Interventional radiology is a field in which there is rapid evolution, and with that, there are rapid ups and downs and failures and successes. As we define ourselves, we are encountering new clinical problems to be treated, and obstacles in the business world and in the partnerships we create. It is important to know that when dips occur, the future is filled with bright prospects.

Another important concept I keep in mind is "Fortune favors the well-prepared." As we move into new arenas and develop both new technology and new practice structures, we must be diligent in making sure we best understand our opportunities, technologies, who we should treat, and the systems needed to optimize care, creating the best possible body of knowledge for sound decision making, whether it is clinical, device-related, or related to business.

Finally, "Wherever you go, that's where you'll be." As interventional radiologists, perhaps more than any other specialty, we have numerous avenues that we can pursue, explore, and develop. We must choose carefully where to go and what to build for ourselves because that is where we will be in 5 to 10 years. Our decisions today will define our position tomorrow. As I also like to quote, "The best way to predict the future is to create it." ■