Ziv J. Haskal, MD

At the forefront of radiology research, Dr. Haskal discusses stent graft use in dialysis, embolotherapy by IRs, and why 2007 is the year of DVT.

You have done significant work in procedures ranging from minimally invasive treatment of arterial and venous disease, UFE, pediatric intervention, to varicose vein laser therapy, to name a few. What is the current focus of your research energy? I suppose I have done research in rather broad areas, compared with researchers in single-organ subspecialties. I started my research and publication career working in portal hypertension and transjugular, intrahepatic, portosystemic shunts (TIPS). At the time, there were enormous questions about outcomes, technical aspects, complications, imaging, and solving the significant problems of shunt stenosis. These issues led me into animal research, device design, and ultimately into larger clinical trials. I quite enjoy small- and large-animal research; it has led me into gene therapy and other areas I would have otherwise never entered.

Approximately 8 years ago, I made a conscious decision to move into creating and running large-scale, greater-impacting, controlled trials in interventional radiology (IR)—an idea that was foreign to me (and to many radiologists). Since then, I have designed and led several major trials. It is similar to having your first screenplay produced. It is a far lengthier process and takes a far greater attention than other typical projects. It may take 6 to 7 years from concept to funding to completion.

These days, among other things, I still have active research projects in TIPS, hemodialysis therapies, peripheral and renovascular disease, and hybrid, catheter-directed therapies to treat deep vein thrombosis (DVT), as well as work with novel, early-phase device companies in a variety of vascular and nonvascular areas. I am working on my own ideas as well, and trying to get a venture off the ground.

What are the most significant barriers to providing optimal care to patients with DVT? We still need the Copernican inversion in this area. Current pharmacologic therapies are excellent at reducing clot propagation and pulmonary embolus, but they do not focus upon the effects of DVT on the affected limb. There is ample and continually increasing evidence that postphlebitic syndrome is not a rare and long-delayed event and can have debilitating consequences, often in young patients at their peak physical and socioeconomic function. The recurrence rate of DVT in that limb is high as well, presumably because that vein remains an abnormal substrate more prone to recurrent thrombosis because of the endothelial and valve damage done during the slow spontaneous endogenous recanalization that occurs with anticoagulants. We are good at reducing life-threatening pulmonary emboli, but we need to focus on the leg.

For nearly 8 years, I have been saying, "This is the year of DVT," that is, the year of the leg (in DVT), and I think we are finally approaching that milestone as a greater groundswell of awareness is being built. It has been a long haul. I first held a study meeting with a draft protocol for a randomized thrombectomy device with urokinase versus urokinase DVT lysis in 1996; I have been carrying the torch, with others, for a while. Some large national trials are in the works, and I am hoping they will move to fruition.

How have recent technological developments improved upon DVT treatment? What we need, aside from controlled trials, are validated, safe, and rapid approaches to acute clot removal that can be accomplished within 1 hospital day. Ideally, the patient would leave the same day with a bandage and low-molecular-weight heparin injections. With those, we can best ask comparative questions regarding outcome and quality of life. DVT lysis as a 1- or 2-day ICU hospitalization is a nonstarter. I have had a self-imposed maximum 8- to 12-hour protocol limit on catheter-directed DVT therapy for many years and worked to trim that time by using aggressive clot removal tools, drugs, and stents. Outcomes have been solid, and patient satisfaction is high—even for patients with chronic obstructive changes, but this cannot remain a cottage-industry, kitchen-sink procedure. There need to be tools good enough to relatively standardize and propagate and benchmark approaches among skilled interventionists.

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Said another way, a difficult IR procedure, one in which you might take pride in your technical skills and judgment, such as a complex TIPS procedure, should be viewed as an imperfect one. We need to innovate technologies that make procedures easier. In DVT, there are novel drug-, device-, and energy-based therapies finally reaching near-maturity to accomplish this. Imagine your newly diagnosed DVT patient coming to you from the emergency room, having a procedure using a 4-F system guided by fluoroscopy and sonography that is completed at that setting or within several hours, then being discharged home with compression stockings and anticoagulation.

What is your opinion on the use of stent grafts in dialysis? Thus far, they are the only proven tool that improves outcomes over the gold standard therapy for treating stenotic venous anastomoses in graft patients. The results are clear and solid from a large-scale, controlled trial, with rigorous definitions of outcome and safety built upon National Kidney Foundation guidelines. The trial I ran set the standard for how these device questions should be asked (for next-stage therapies). We recognize that long-term access lifespan will be driven by creation and maintenance of native fistulae and likely by some of the novel cellular and genetics-driven approaches to reduce and delay intimal hyperplasia. Nevertheless, I think stent grafts, as current-phase tools, provide the immediate ability to make an endovascular revision of an initially surgically constructed anastomosis without reoperation. In fact, you improve it by converting its end-to-side nature into an end-to-end anastomosis that appears less prone to shear stress and recurrent hyperplasia. We looked at 794 follow-up images and found that nearly all restenosis was slowed tissue ingrowth at the edges.

Much of your recent clinical work has focused on the use of embolotherapy in various applications; do you feel that IRs are particularly well-suited for these procedures? What can you tell us about the 2007 Global Embolization Symposium and Technologies (GEST), for which you are serving as one of the three course directors and originators? IRs created and developed most of the toolkit and techniques that are used in embolization, so naturally they lead in most of the embolotherapy procedures and research. Initially, preferring organ- and diseased-based education, I resisted the idea of a course built around embolization (a tool that is so diverse), but my codirectors convinced me. I soon found that the response to the GEST meeting has been overwhelming; the program has really struck a resonant chord. We have more than 450 attendees from 36 countries, and an internationally renowned faculty of more than 50 physicians. The program consists of tight, highly focused lectures on all arterial, vascular, tumor, and nonvascular aspects of embolization. The definition of embolotherapy is far-reaching. In some settings, a stent graft is an embolotherapy adjunct—a topic we also cover. The growth of embolization tools, techniques, and technologies in development and hush-hush mode is steep. We are far along in planning and innovating the GEST 2008 content. I suppose springtime in Barcelona is not a bad thing, either.

You chaired the Society of Interventional Radiology's Annual Meeting in Seattle this year. Any particular notes from the meeting? It was a great meeting. We had a record number of scientific abstracts, a record number of interested medical students and residents, and a clear growth in attendee numbers compared with the preceding several years. There was a significant number of medical stories reported in the national news based upon research premiered at the SIR. The meeting evaluations were strongly positive, and the mood of the attendees was that of excitement, exuberance, empowerment, and invigoration. People were activated. We premiered many new features, including clinical care focus lectures in nearly every area, dense oncology, peripheral vascular, imaging, and cosmetic IR content. We applied a challenging lecture format of short, super-focused, categorical, and plenary lectures, which, I think, worked well. This format forced the speakers to reinvigorate their lectures and distill their specific messages to the most critical kernels of information. I likened it to the attention deficit disorder meeting—but then physicians are said to interrupt their patients on average 18 seconds after they begin speaking, so this really is our demographic.

Which procedures do you find the most rewarding? I received a nice compliment last week. Four unrelated patients of mine asked me, during a follow-up clinic visit, if I could be their primary doctor. It made me aware how much I now enjoy the clinical longitudinal care of patients with conditions I manage, such as portal hypertension, oncology, vascular, and gynecologic conditions. It is a far cry from the fellow's adrenaline- and procedure-driven reasons to enter this great specialty. Having said that, though, I love all complex, potentially insoluble work, be it arteriovenous malformations, peripheral arterial disease, renovascular work, liver procedures, etc. To aim for the best outcomes, one has to believe that procedure-based medicine can be perfected. Well-done complex procedures should look mundane and trivial to the observer—that is the apogee. What's not to love about a field that allows me to strive for expertise in so many branches of medicine? ■