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An endovascular expert describes the Top Gun competition, simulation training, and a multi-industry collaboration called Pumps and Pipes.

You recently ran a Top Gun competition at the Society for Clinical Vascular Surgery (SCVS); what was the impetus for this? The concept was modeled after a national competition for general surgery residents who compete in a laparoscopic simulation competition. This is both educational and fun. Endovascular simulation has been demonstrated to be a very valuable training tool, but not everyone has access to it. The Endovascular Top Gun competition's goals were to showcase the technology of simulation in endovascular procedures, generate a sense of excitement within the fellowship programs, and continue to develop SCVS's focus on vascular fellows.

How was it set up? Top Gun was supported by a grant from Boston Scientific Corporation (Natick, MA), and the competition was developed on the SimSuite platform (Medical Simulation Corporation, Denver, CO). Working with engineers from that company, we developed a series of parameters for the procedures being tested. We tested the fellows on two iliac cases, had them answer some didactic questions, and then they performed two iliac cases. The field was narrowed to three finalists who were then tested on a carotid stent case live in front of their peers. During the finals, a panel of three judges awarded "style" points. The winner was chosen based on an aggregate of both technical and adjudicated scores (Table 1). The first winner of the Top Gun award was Dr. Tiff Siragusa of the University of Arkansas.

How closely do you believe this experience mirrors real-life interventions? The endovascular simulators are remarkably like real-life interventions. They teach the procedure and device sequences and increasingly have complications built into the cases. Simulation allows the physician to try different catheters and approaches and to gain procedural confidence. I particularly like the SimSuite because it includes preprocedure evaluation and postprocedure questions and includes hemodynamic monitoring during the procedure to which the physician must respond.

What are your thoughts on medical simulation and its role in training? It will be mandatory, and new device training will occur initially on a simulator. I suspect that to maintain credentialing, a physician may perform compulsory evaluations on a simulator to certify technical ability.

What did the participants learn from this competition? Participants experience the anxiety of competing against their peers and potentially not being as good as they thought they were. A few folks became really sweaty. In all seriousness, there was enjoyable competitiveness.

What did you learn from this competition? For a first attempt, this was very successful. Because we were not entirely sure how this would flow—for example, how much time each participant really required to complete the cases—we did not conduct much marketing. Now that we have refined the event, we will increase the number of competitors and publicize it among the program directors. I would like to see this competition extended to cardiology and interventional radiology fellows. Then we could have the best from each specialty compete for the national title.

How did you get involved in training cardiac surgeons at Methodist DeBakey Heart Center in Houston? When I first arrived in Houston, most of the vascular procedures were performed by cardiac surgeons who called themselves cardiovascular surgeons, a specialty that does not actually exist. We competed on the basis of our endovascular capability; if we could control the new technology, then we could control patient flow. The endovascular revolution had essentially completely bypassed cardiothoracic surgery, and their leadership had done a great job to facilitate this. My job was to re-establish vascular surgery as a recognized entity, using endovascular procedures as our foil.

Five years later, my opinion is changing. Vascular surgery is doing well nationally, but there is doom, gloom, and despair among finishing cardiac surgery fellows. Job opportunities are lacking, salaries are down, and even thoracic stent grafts are routing around them to the vascular surgeons. There is only one direction that they can easily go: that is to perform open vascular cases and, if possible, gain endovascular skills.

Why are you "assisting the competition?" We can either block this or facilitate this, and we must learn from

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the lessons of the past. Radiologists tried to block vascular surgeons and failed miserably, resulting in relationships that were forever tarnished, and vascular surgeons still emerged as major endovascular participants.

Cardiac surgery trainees are turning to us for help. They are technically adept surgeons who have been "failed" by their training programs. Vascular surgery is at the top of the wave right now, and cardiac surgery is at the bottom. Now is a great time to find common ground and to make the deal. I have come to believe that we need to create cardiovascular interventionists who will control vascular imaging and jointly decide how to manage patients, and their core competencies will be atherosclerosis management and endovascular and open surgical capabilities.

What can endovascular specialists learn from thoracic surgeons? Most of the thoracic aortic knowledge previously resided in cardiothoracic surgery. However, as thoracic endografts were studied, those individuals were the prime naysayers concerning this new technology, and they were consequently marginalized in the trial design, conduct, and reporting. This is a tragedy for device companies and patients alike. Surgeons must have an open mind and be willing to evaluate (not endorse) new technologies so that they have a seat at the table. Cardiothoracic surgeons have so much knowledge and advice to offer as we move into the arch, ascending aorta, and aortic valve.

How did a Scot land in the Lone Star State? Larry Hollier, bless his heart, gave my name to the chair at Baylor College of Medicine, who offered me a job. The opportunity to follow Michael E. DeBakey, MD, and to work where Dr. Stanley Crawford and Dr. Denton Cooley had operated was more than I could resist. I work with some of the finest technical surgeons that I have ever seen, and it has been a privilege to be part of the Methodist DeBakey Heart Center.

How can vascular surgery appeal to new fellows? Vascular surgery as a specialty needs to present itself much more efficiently to potential fellowship applicants; sometimes I think we take ourselves too seriously. In my opinion, there has never been a more optimistic time than now for the specialty, with its widespread opportunities in control of lifestyle, financial reimbursement, and technological innovation. For some reason, we are not communicating these opportunities sufficiently to prospective applicants—we should be overloaded with applicants.

You are planning a conference called Pumps and Pipes; what is the story behind this venture? In Houston, although the oil and gas industry dominates, the second most important business is medicine. There is little interplay between these two great industries, but there are remarkable synergies between the oil and gas business and cardiovascular disease, hence Pumps and Pipes, a joint conference among cardiovascular interventionists and oil and gas engineers. This will be a 1-day symposium in Houston in October that will frame a series of problems, for example, how to prevent tubes from accumulating sediment, how to steer a hollow tube (drill vs catheter), and how to seal a leaking tube. Engineers and physicians will then present their approaches. The target audience is medical researchers, medical device industry engineers, and appropriate engineers from the energy business. This should be a fun and exciting exercise that could potentially develop leapfrog applications. I am a firm believer that most of the problems I confront can be fixed using tools that already exist in someone else's tool box. ■

TABLE 1. AN EXAMPLE OF TOP GUN ILIAC CASE SCORING

Query	3 Points	2 Points	1 Point (pt)
Total procedural time	<8 min	8 to 10 min	>10 min
Total contrast used	<75 mL	75 to 100 mL	>100 mL
Total fluoroscopy time	<5 min	5 to 7 min	>7 min
Medication Administration			
Heparin ±			Given – 1 pt
Analgesic ±			Given – 1 pt
Anxiolytic ±			Given – 1 pt
Predilatation balloon inflation, time	25 to 35 s	<25 s	>35 s
Predilatation balloon inflation, pressure	6 to 9 atm	<6 atm	>9 atm
Wire first crosses culprit lesion	<5 min	5 to 7.5 min	>7.5 min
Stent size, diameter	6 to 8 mm	5.5 to 4 mm	≤3.5 mm
Predilatation balloon length	20 mm	>25 mm	<15 mm
Equipment Selection			
Hydrophilic wire			Selected – 1 pt
Stiff wire			Selected – 1 pt
Guide, any curve			Selected – 1 pt
Optional: Did stent cover the predilatation area? Accuracy of this query?			
Case 6 only: adverse event dissection treatment time	**<3 min**	**3 to 5 min**	**Not treated**