



## The Society for Cardiovascular Angiography and Interventions

### SCAI President's Page

## A Conversation with Dr. Ted Feldman: Interventional Treatment of Structural Heart Disease

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For my first President's Page, I have invited Society Past President Ted Feldman, M.D., FSCAI, to join me in a conversation about the relatively new field of structural heart disease. I hope you find it interesting.

**Dr. Feldman:** First, I'd like to offer a personal welcome to the SCAI presidency. It's especially important because you are the Society's first pediatric physician to serve as President. The Society was founded by

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radiologists, and now we are mostly made up of adult cardiologists, so I think this presidency reflects a couple of things germane to our discussion. First, our activity is more and more multidisciplinary, and second, structural heart disease is now center stage in the minds of all of us who practice interventional therapy.

**Dr. Hijazi:** Thank you, Ted. Ted has been a very close friend since I came to Chicago and even before that, I was following his footsteps. Ted was our president not too many years ago, and he paved the way to where I am now.

### Structural Heart Disease Today

**Dr. Hijazi:** Structural heart disease reflects a true paradigm shift in all of our thinking and practice because 5, 6, or 7 years ago it was truly in its infancy. You could say that it's in its childhood now and that this child has many more years to grow. It's a subspecialty that will attract many cardiologists.

The field of structural heart disease means a lot to us because we started from scratch. Fortunately, we have gained a lot from our experience, so we are trying to disseminate this experience.

**Dr. Feldman:** I think the interest in this field comes from two directions. One is from the standpoint of the patient. There is a growing family of problems that we can completely solve in awake patients, on an outpatient or one-night-stay basis, who traditionally would have been treated surgically. And some of these would have had to be large, complicated, cardiopulmonary bypass surgeries. We're able now to treat more and more patients who didn't have options before. On top of that, these are challenging and interesting procedures from the technical, procedural, and imaging standpoints. There's a lot here to really captivate our community.

**Dr. Hijazi:** That's right. And on top of the technical, as you mentioned, there is the intellectual point of view. We're dealing with all these patients with congenital and/or structural heart disease, so the dynamics are different from the straightforward cases. Many cardiologists finish their training without encountering a transseptal puncture. In our practices, we do it on an almost daily basis.

### Challenges Facing the Field of Structural Heart Disease

**Dr. Feldman:** Learning hemodynamics has become almost a lost art in the adult programs. I think at SCAI's annual meeting we've done something to address this issue by adopting the really excellent hemodynamics course that Dr. Zoltan Turi has had for many years. In addition to Dr Turi's annual course, we have a mini version for the Society's annual meeting.

Beyond that, I think it's a great challenge to offer training that is adequate for this field without having specialized programs. Unfortunately, I think we've reached the point where the traditional one-year adult interventional training program is just the beginning of the learning experience for structural intervention.

**Dr. Hijazi:** I agree. I think the Society will take the lead in developing standards and guidelines on training the structural heart disease interventionalist because right now there's really nothing in writing. We also need to provide credentialing for hospitals. We want to be careful in controlling our specialty and making sure that we always do our best for patients.

**Dr. Feldman:** One of the inherent paradoxes in the structural field is that the procedures, as compared to coronary artery interventions, are of higher complexity and lower frequency. So, for example, consider the requirement for coronary percutaneous coronary intervention (PCI) is 250 cases during fellowship. If you use that as a benchmark, you can't have 250 cases of a more complicated intervention, such as VSD closure or percutaneous aortic valve replacement, in the training experience because these are much more complicated procedures. In addition to talking about guidelines for these programs and trying to provide some sort of framework for structural training, we have to come up with a way to provide a metric for the training.

**Dr. Hijazi:** And, to add to your point, because structural heart disease is not as common as coronary heart disease, maybe we need to look deeper into the role of medical simulation in training. The Society has to take the lead in setting the standards for these physicians to undergo the training process to certify them to do these procedures.

One goal of my presidency is to establish a council for structural heart disease. The role of this council will be to develop guidelines, training standards, and credentialing processes.

**Dr. Feldman:** I think that's going to be a critical role for the Society. One of the challenges we have is that there is no governing body anywhere for credentialing other than medical licensure at the level of the hospital. On the one hand, this is a great problem, and on the other, it is a challenge, to try to help with this credentialing at the hospital level.

### The Future of Interventional Therapies for Structural Heart Disease

**Dr. Feldman:** The field has already gone far from a few years ago when we had no tools dedicated to structural therapy. Products are finally being designed specifically for their intended procedures with all kinds of refinements.

**Dr. Hijazi:** Yes, there are more and more manufacturers listening to us and working with us, so I think over the next 50 years we're going to see a plethora of new devices and new technologies. It's going to happen, but it will take time in the United States.

Right now, at least in the adult world, there are some valves available on an experimental basis. None of them are for children. I would love to see miniaturization of all these products, be it the aortic or the mitral valve. Why can't we apply this in children and minimize the surgical trauma for them? Maybe we could begin to apply what we will learn from our adult colleagues to pediatrics. I would love to see an aortic valve in a child.

**Dr. Feldman:** That will be an exciting thing, no doubt. And we'll probably figure out places to put little valves like that in adults that maybe we never dreamed of.

We have already started to climb the biggest mountains—valve repair and valve replacement. I really do expect that on the medium-term horizon we'll have the percutaneously implantable mitral valve replacement device in addition to the aortic valve. My dream is to see these become truly routine. I'd like to see these devices have a low enough profile that somebody can come to the hospital as an outpatient in the morning, get an aortic valve replaced, and go home the next day—in the same way that some of our ASD and VSD patients come in and leave ambulatory, really not appreciating the bullet they dodged.

**Dr. Hijazi:** For pediatric cardiology, obviously, the field is much slower in terms of the number of patients we see. If I see a valve that I can put in a 5-year-old child 10 years from now, I will be extremely happy and have achieved a huge goal.

**Dr. Feldman:** We already have aortic valves on an experimental basis. It's going to take a decade to begin to extend aortic valve replacement into younger and healthier patients. And the timeline on mitral valve replacement is highly uncertain given that we might expect experimental devices in 2, 3, or 5 years with a lot of development after that.

**Dr. Hijazi:** Do you think this concept of a true mitral valve replacement will be successful?

**Dr. Feldman:** Absolutely. One of the things that comes from efforts to develop mitral valve repair is a greater and greater appreciation for the limitations of mitral repair. The real clinical benefit of surgical repair in patients with heart failure and significant mitral regurgitation is probably less clear today than we thought it was a year ago. And the struggle to repair valves might be less important if there were a way to completely replace a mitral valve relatively noninvasively. And if that can be done without a sternotomy

or a cardiopulmonary bypass, it's going to take some time to figure out, but it could even be preferential to repair.

**Dr. Hijazi:** The other thing in pediatric cardiology and in congenital heart disease is that unfortunately probably 90% of what we do is off-label. We are trying to push the companies to develop and test devices specifically for the pediatric patients. Congress passed some laws last September to encourage companies to develop and test devices for pediatric use.

### Advice for Early-Career Interventionalists

**Dr. Hijazi:** If young cardiologists are interested in this area, we encourage them to contact Dr. Feldman, myself, and the other leaders in the country. If you want to learn about structural heart disease, you need to go to a center and spend at least a year with somebody like Ted who does this day in and day out.

**Dr. Feldman:** These are not easy procedures. The range of equipment, multidisciplinary support, and the expertise you need to have these procedures done probably won't be in every hospital in every community.

**Dr. Hijazi:** Yes, volume is critical to maintain the certain set of skills a cardiologist will need to do these procedures. Rural areas don't have enough volume. It is like heart-transplant programs—if you need a heart, you go to a certain center in a certain city. It is the same thing for percutaneous surgery. For now, limiting these procedures to high-volume operators is the key to success.

### SCAI's Role

**Dr. Hijazi:** We're going to charge the council to educate fellow colleagues and the public about this emerging subspecialty and its various devices and techniques. The other thing, of course, is to set guidelines, because right now, we may not have the ability to do randomized trials to compare with the gold standard, which is always open-heart surgery. So, instead of doing the randomization, we can set certain guidelines and write objective performance criteria.

**Dr. Feldman:** At every level, we're going to try to define principles or guidelines for big challenges. When you start to dissect training and research programs, you run into multiple complexities. For example, how do you describe the requirements to be a research site? It's very difficult to put into a simple, objective sort of criteria. I think most people want or expect it to come down to a checklist. This is not a checklist endeavor. So the task of the Society is to develop a framework that is not overly simplistic. We're not going to recapitulate the 75 cases

a year requirement for coronary intervention that has on the one hand served us, and on the other hand plagued us since the number was first concocted.

**Dr. Hijazi:** The training guidelines will be good, because, otherwise, if you open the door for everybody, that's when you start to see complications and bad outcomes. We have a huge task in front of us to

navigate in this rough water of regulating subspecialties. We want to work with our colleagues in cardiology, so that at the end of the day, our patients will benefit.

Please send your thoughts about the interventional treatment of structural heart disease to me at [president@scai.org](mailto:president@scai.org). I look forward to hearing from you on this and other topics.