Editorial

Training in structural heart disease: a fellow's perspective

Bennet George[1], Sun Moon Kim[2], Matthew J. Chung[3]

[1]Division of Cardiovascular Medicine, Gill Heart and Vascular Institute, University of Kentucky, Lexington, Kentucky, USA; [2]Division of Cardiology, University of North Carolina, Chapel Hill, NC, USA; [3]Division of Cardiology, Duke University Medical Center, Durham, NC, USA

Correspondence to: Matthew J. Chung, MD. Division of Cardiology, Duke University Medical Center, 2301 Erwin Road, Durham, NC 27710, USA. Email: matthew.chung@duke.edu.

Submitted Jun 10, 2019. Accepted for publication Jul 08, 2019.
doi: 10.21037/cdt.2019.07.05
View this article at: http://dx.doi.org/10.21037/cdt.2019.07.05

When Andreas Gruentzig started an interventional cardiology fellowship in 1980, it is unlikely that he fully anticipated the exponential growth of the field over the next several decades. The spark that he created with the first coronary balloon angioplasty in 1977 ignited a wildfire which has led to the development of myriad catheter-based technologies for cardiac conditions that traditionally require open-heart surgery. Alain Cribier added fuel to the fire when he performed the first transcatheter aortic valve replacement (TAVR) in 2002, triggering the arms race to develop the technology to treat valvular and structural heart defects with catheter-based systems. In the last decade, the burgeoning field of structural heart disease (SHD) has necessitated the development of formal training programs to provide adequate exposure and ensure competence for fellows-in-training. However, as the field of SHD grows at an exponential pace, there continues to be a lack of standardization across training programs. Additionally, for the fellow-in-training, there are a number of factors to consider when deciding whether to pursue a dedicated year of SHD training.

Current state of SHD training

According to the Society of Thoracic Surgeons/American College of Cardiology Transcatheter Valve Therapy Registry, there are 625 centers in the United States that perform transcatheter valve replacement and repair procedures. In contrast, the Society for Cardiovascular Angiography and Interventions (SCAI) Structural Heart Disease Council lists only 39 non-Accreditation Council on Graduate Medical Education (ACGME) certified SHD training programs in the United States. Additionally, most of these programs offer only one training position. Importantly, the structure, length and scope of training is highly variable among programs. Most programs provide a robust exposure to TAVR with a smaller and variable experience with mitral, tricuspid or pulmonic interventions, atrial septal or ventricular septal defect closure, left atrial appendage closure, alcohol septal ablation, paravalvular leak closure and congenital heart disease interventions. Additionally, for TAVR some centers use almost exclusively a balloon-expandable or self-expanding valve system, which may prohibit a trainee from becoming facile with both valve-delivery platforms. These differences in practice patterns and procedural volume will invariably affect competence in different SHD procedures.

Outside of a dedicated SHD training program, fellows-in-training may be exposed to SHD procedures during their one-year interventional cardiology fellowship and established interventional cardiologists may learn to perform SHD procedures on the job via on-site clinical specialists and physician proctors. However, 12 months of interventional training is insufficient to master coronary interventions, peripheral interventions, and all SHD procedures. Furthermore, as the number of formalized SHD programs increases, the "on the job" training pathway will also likely become obsolete. In an effort to ensure a minimum level of standardization for proceduralists, the Food and Drug Administration has mandated training courses for TAVR and MitraClip, however, these forums are insufficient to compensate for limited exposure outside the context of a dedicated year of SHD training. Importantly, while these courses may shore up deficiencies in the technical aspects of using SHD devices, they cannot replace the clinical acumen gained from evaluating patients with SHD at the bedside. In 2010, SCAI published an expert consensus statement that proposed a core curriculum for training in SHD (1). Yet, SHD training still remains

unstandardized and currently there is no formal process for becoming certified to perform SHD procedures. Furthermore, individual minimum annual volume requirements are lacking and collectively, these factors may have important implications for ensuring consistent competency and high quality of care among SHD proceduralists.

Pros and cons of a SHD fellowship

The pros and cons of a dedicated SHD year depend on the eye of the beholder. To the trainee, the obvious benefit is the addition of new arrows to the quiver of a budding interventional cardiologist within the context of a training program designed to promote lifelong learning. Some would argue that these skills could be acquired in a real-world workforce setting under the tutelage of an experienced structural interventional cardiologist. However, as discussed above, this pathway to becoming a SHD proceduralist will likely fade as SHD training becomes increasingly formalized.

A possible drawback of formal SHD training is the additional time spent as a trainee, coupled with the opportunity cost of another year of delayed income-earning potential. Additionally, after seven years of post-graduate training, it is not unusual for a fellow to develop an eagerness to break away from the chains of fellowship. Burnout is likely common, and attention has been drawn towards creating interventional tracks within general cardiology fellowship to curtail the overall length of training (2).

Another important consideration is the potential for attrition of skills in coronary or peripheral interventions during the dedicated SHD year. The day-to-day schedule can be demanding, especially since most programs only have one structural fellow and significant time is spent, appropriately, on patient selection and interpretation of multimodality imaging. Considering that the bulk of most SHD jobs will be coronary and/or peripheral interventions, it is essential to continue to participate in these cases during the SHD year. This can be challenging, however, when there are first year interventional fellows who also need to gain adequate experience. This may be mitigated by participating in interventional call as well as supervising the interventional fellows' cases when able.

Perhaps the most significant deterrent to considering formal SHD training is the daunting task of finding a desirable SHD job. As limited as the number of SHD training programs is, the number of SHD jobs seems to be even more scarce in the currently saturated job market. This is likely due to the relatively young age of the SHD field and the short duration that most SHD clinical programs have been established with insufficient volume to warrant adding additional operators. However, with the recently published low-risk TAVR trials, the COAPT trial and additional SHD devices in the pipeline, the job market will likely warm over the next few years.

Transitioning from training to practice

For hospitals, hiring an interventional cardiologist with SHD training is a double-edged sword as it provides a wider net to cast in the search for patients, however, SHD procedures are often time-consuming and typically generate less work relative value units compared with other clinical activities that could be done during that time. This has implications not only for the hospital's finances, but also for the individual operator as their compensation may be lower compared with other non-SHD interventional cardiologists, depending on the compensation model.

Aside from academic versus private practice, there are also wide variations among jobs in the proportion of time that is spent doing SHD procedures. Nearly all SHD jobs will also include coronary or peripheral interventions, and most private practice jobs will include consultative cardiology as well as time spent reading echocardiograms, cardiac computed tomography or nuclear imaging studies. For those that desire a narrower scope of practice, a job in an academic center would likely be more conducive to this.

In summary, training in SHD is exhilarating, challenging and overall rewarding. As the field moves forward, standardizing SHD training will be important to ensure the best quality of care for our patients. As interventional fellows contemplate the potential for a dedicated SHD year, finding a mentor to help navigate the multiple considerations outlined above may be the best asset to successfully transition from training to practice.

Acknowledgments

The authors would like to thank Dr. J. Kevin Harrison, Dr. John Vavalle and Dr. John Gurley for their leadership in developing exceptional fellowship training programs in structural heart disease.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Cite this article as: George B, Kim SM, Chung MJ. Training in structural heart disease: a fellow's perspective. Cardiovasc Diagn Ther 2019. doi: 10.21037/cdt.2019.07.05

References

1. Ruiz CE, Feldman TE, Hijazi ZM, et al. Interventional fellowship in structural and congenital heart disease for adults. JACC Cardiovasc Interv. 2010;3(9):e1-15.
2. Golwala H, Pant S, Raheja P. The Changing Face of Interventional Cardiology Training: A Fellow's Perspective. J Am Coll Cardiol 2015;66:484-5.