

Interventional Cardiology is Rapidly Evolving Field that Encompasses Diagnostic

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Abstract

Interventional cardiology is a rapidly evolving field that encompasses both diagnostic and therapeutic procedures. With advancements in imaging technology, cardiac computed tomography has emerged as a valuable tool for evaluating cardiovascular disease. Incorporating cardiac CT training into interventional cardiology fellowships can provide fellows with a comprehensive skill set and enhance their ability to provide optimal patient care. This article explores the potential benefits of reconstructing interventional cardiology fellowships to include cardiac CT training and discusses the challenges and opportunities associated with this integration.

Keywords: Tomography • Diagnosis • Coronary intervention • Morphology

Introduction

Interventional cardiology plays a critical role in the management of cardiovascular disease. The field primarily focuses on catheter-based procedures, such as percutaneous coronary intervention and structural heart interventions. These procedures require precise imaging guidance for optimal outcomes. Traditionally, interventional cardiologists have relied on techniques like angiography to visualize the coronary arteries. However, this modality provides limited anatomical information and lacks the ability to assess plaque characteristics or detect nonobstructive disease. Cardiac CT has revolutionized cardiovascular imaging by providing detailed anatomical information, functional assessment, and characterization of plaque morphology. It offers the ability to noninvasively visualize the coronary arteries, quantify coronary artery calcium, evaluate plaque burden and composition, assess myocardial perfusion, and even guide pre-procedural planning. By incorporating cardiac CT into interventional cardiology fellowships, trainees can acquire essential skills in interpreting CT images, understanding imaging protocols, and using software tools for accurate diagnosis and patient management.

Literature Review

Cardiac CT provides complementary information to traditional angiography, enabling precise lesion assessment, visualization of complex anatomical variants, and identification of disease outside the coronary arteries. By integrating cardiac CT training, interventional cardiology fellows can develop a comprehensive understanding of cardiovascular imaging, facilitating accurate diagnosis and treatment planning. Cardiac CT can aid in patient selection for interventions by identifying those who would benefit from revascularization and guiding the choice of revascularization strategy. Partnerships with radiology departments should be established to facilitate collaboration and knowledge sharing between interventional cardiologists and cardiac radiologists. By incorporating cardiac CT into interventional cardiology fellowships, fellows can acquire the skills to

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determine optimal treatment approaches based on anatomical and functional data, leading to improved patient outcomes. Cardiac CT can assist in pre-procedural planning by providing detailed information on coronary anatomy, calcification, and vessel dimensions [1].

Discussion

Additionally, it can guide interventions, such as structural heart procedures, by facilitating accurate device sizing and positioning. Fellowships incorporating cardiac CT training can equip interventional cardiologists with the expertise to utilize these valuable tools during procedures, improving procedural success rates and patient safety. Including cardiac CT training in interventional cardiology fellowships fosters collaboration between interventional cardiologists and cardiovascular imagers. This collaboration promotes interdisciplinary teamwork and encourages a comprehensive approach to patient care. Reconstructing interventional cardiology fellowships to include cardiac CT training comes with challenges and opportunities. Challenges include the need for additional training time, access to cardiac CT scanners, and integrating the training curriculum effectively. Overcoming these challenges requires close collaboration between interventional cardiology and radiology departments, ensuring adequate resources, and designing a structured curriculum that balances procedural training and imaging expertise. Joint educational conferences, case discussions, and research collaborations can enhance the integration of cardiac CT into interventional cardiology practice [2].

Opportunities include leveraging technological advancements in cardiac CT, such as artificial intelligence algorithms for image interpretation, which can aid in rapid and accurate diagnosis. Integrating cardiac CT training into fellowships also prepares trainees for emerging trends in interventional cardiology, such as transcatheter aortic valve replacement procedures, where pre-procedural imaging plays a crucial role. Incorporating cardiac CT training into interventional cardiology fellowships can provide numerous benefits, including enhanced diagnostic capabilities, improved patient selection, better procedural planning, and a collaborative approach to patient care. However, challenges related to training time, resource allocation, and curriculum integration need to be addressed. By overcoming these challenges and capitalizing on emerging opportunities, interventional cardiology fellowships can be reconstructed to equip future interventional cardiologists with the necessary skills to navigate the evolving landscape of cardiovascular imaging and interventions. Interventional cardiology is a rapidly evolving field that requires physicians to be adept at using various imaging modalities to diagnose and treat cardiovascular diseases [3].

Traditionally, interventional cardiology fellowships have focused primarily on training in invasive procedures such as angioplasty and stenting. However, with the advancements in non-invasive imaging techniques, such as cardiac computed tomography there is a growing need to integrate this training into interventional

cardiology fellowships. This article explores the importance of including cardiac CT training in interventional cardiology fellowships and suggests a framework for reconstructing these programs. Cardiac CT has emerged as a powerful tool in the diagnosis and management of cardiovascular diseases. It provides detailed three-dimensional images of the coronary arteries, heart chambers, and valves, allowing for accurate assessment of the extent and severity of coronary artery disease, identification of high-risk plaques, and evaluation of structural heart diseases. Additionally, cardiac CT can assist in pre-procedural planning, guiding interventional cardiologists in selecting appropriate treatment strategies and optimizing outcomes. Upon completion of the reconstructed fellowship program, fellows should be eligible for certification or recognition in cardiac CT, such as the Certification Board of Cardiovascular Computed Tomography [4].

Including cardiac CT training in interventional cardiology fellowships can offer several benefits. Firstly, it allows interventional cardiologists to develop expertise in interpreting and integrating cardiac CT findings into their decision-making process. This skill is crucial in accurately identifying lesions that may benefit from invasive intervention versus those that can be managed conservatively. Secondly, cardiac CT provides a non-invasive alternative to invasive coronary angiography for assessing coronary artery disease. By training interventional cardiologists in cardiac CT, it expands their armamentarium of diagnostic tools and potentially reduces the need for unnecessary invasive procedures. Finally, cardiac CT training enhances collaboration between interventional cardiologists and radiologists, fostering a multidisciplinary approach to patient care and improving overall outcomes. To incorporate cardiac CT training into interventional cardiology fellowships, certain modifications to the existing curriculum and training structure are necessary. The following framework outlines the key components for a reconstructed interventional cardiology fellowship program [5].

The fellowship curriculum should be expanded to include didactic and hands-on training in cardiac CT. This training should cover the principles of cardiac CT imaging, image acquisition and reconstruction techniques, interpretation of cardiac CT findings, and integration of CT results with invasive coronary angiography. Additionally, fellows should be exposed to advanced applications of cardiac CT, such as CT fractional flow reserve and CT-guided structural heart interventions. A dedicated period of clinical experience in a cardiac CT lab should be incorporated into the fellowship program. This would involve direct involvement in performing and interpreting cardiac CT scans under the supervision of experienced cardiac radiologists. Fellows should gain exposure to a wide range of clinical scenarios, including coronary artery disease, structural heart disease, and congenital heart abnormalities. Fellows should be encouraged to participate in research projects related to cardiac CT and interventional cardiology. This involvement fosters a deeper understanding of the field and provides an opportunity to contribute to its advancement [6].

Conclusion

This formal recognition ensures that interventional cardiologists possess the necessary skills and knowledge to independently perform and interpret

cardiac CT scans. The incorporation of cardiac CT training into interventional cardiology fellowships is essential to meet the evolving needs of cardiovascular patient care. By expanding the fellowship curriculum and providing dedicated clinical experience in cardiac CT, interventional cardiologists can gain the skills necessary to utilize this powerful imaging modality effectively. Reconstructed fellowship programs that integrate cardiac CT training offer several advantages, including improved patient outcomes, reduced reliance on invasive procedures, and enhanced collaboration between interventional cardiologists and radiologists. By embracing these changes, interventional cardiology fellowships can ensure that future generations of interventional cardiologists are well-prepared to meet the challenges of the field and provide the highest standard of care to their patients. Quality improvement initiatives focused on optimizing the use of cardiac CT in patient care should also be integrated into the fellowship program.

Acknowledgement

None.

Conflict of Interest

None.

References

- Schreiner, Wolfgang and Peter Franz Buxbaum. "Computer-optimization of vascular trees." *Trans Biomed Eng* 40 (1993): 482-491.
- Schreiner, Wolfgang, Martin Neumann, Friederike Neumann and Susanne M. Roedler, et al. "The branching angles in computer-generated optimized models of arterial trees." *J Gen Physiol* 103 (1994): 975-989.
- Smith, Amy F., Rebecca J. Shipley, Jack Lee and Gregory B. Sands, et al. "Transmural variation and anisotropy of microvascular flow conductivity in the rat myocardium." *Ann Biomed Eng* 42 (2014): 1966-1977.
- AbuRahma, Ali F., Efthymios D. Avgerinos, Robert W. Chang and R. Clement Darling III, et al. "Society for Vascular Surgery clinical practice guidelines for management of extracranial cerebrovascular disease." *J Vasc Surg* 75 (2022): 4S-22S.
- Rothwell, Peter M., Micheal Eliasziw, S. A. Gutnikov and Allan J. Fox, et al. "Analysis of pooled data from the randomised controlled trials of endarterectomy for symptomatic carotid stenosis." *Lancet* 361 (2003): 107-116.
- Kamtchum-Tatuene, Joseph, Jean Jacques Noubiap, Alan H. Wilman and Maher Saqqur, et al. "Prevalence of high-risk plaques and risk of stroke in patients with asymptomatic carotid stenosis: A meta-analysis." *JAMA Neurol* 77 (2020): 1524-1535.

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