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Structural Heart Disease Preoperative Planning: Intracardiac echocardiography guides structural heart disease interventions

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Abstract (Limit 600words)

SHD (structural heart disease) is a relatively emerging area of cardiovascular medicine. Because they were built around the premise of illness diagnosis, traditional imaging modalities fall short of meeting the needs of SHD therapies. Traditional imaging concepts are challenged by SHD therapies, which require imaging to plan, model, and predict intraprocedural outcomes. The lack of a gold-standard open cavity surgical field in transcatheter SHD procedures deprives clinicians of tactile input and visual confirmation of cardiac anatomy. As a result of the reliance on imaging for periprocedural guidance, a new generation of procedural skillsets, the concept of a visual field, and technologies have evolved in the periprocedural planning stage to speed up preclinical device development, physician, and patient education. Early-operator learning curves for transcatheter procedures have been shown to be reduced when 3-dimensional (3D) printing is used in clinical care and procedural preparation. The use of computation modelling in conjunction with 3D printing has helped researchers and developers better understand fluid dynamics in device testing. The use of 3D printing, computer modelling, and, eventually, artificial intelligence, is transforming the landscape of medical education and patient-centered care delivery. Traditional imaging metrics are insufficient for transcatheter structural heart treatments, which necessitate in-depth periprocedural understanding of cardiac pathophysiology and device interactions.

Before Tran's catheter procedures for structural heart disease, a preoperative computed tomography (CT) scan is essential. Device selection, device sizing, and vascular access technique are all aided by CT. For optimal interventionalist support, the interpreting radiologist must be familiar with proper CT procedures, how and where to gather crucial measures, and other imaging characteristics that must be described. CT is the preferred pre-operative imaging modality in patients receiving transcatheter aortic valve replacement and left atrial appendage occlusion, as well as in patients undergoing transcatheter mitral valve replacement, which is still under investigation. In the last decade, significant advancements in structural heart disease therapies have rekindled interest in intracardiac echocardiography (ICE). The ability of ICE to overcome the limitations of transesophageal echocardiography has aided the advancement of ICE technology and its clinical application. This review highlights important research about ICE and gives a practical guide to using ICE to guide various structural cardiac procedures for structural interventionalists.

Biography (Limit 200words)

Amelia Arria M is a Senior Therapist and a researcher who has de-veloped a technique called Structural Heart Disease of the Body which helps people recover from hormones; growth factors learn self-help techniques and lead more productive lives. Her in- tersubjective ethnographic study has been published in a text called, "Structural Heart Disease Preoperative Planning: Intracardiac echocardiography guides structural heart disease interventions, Connection and disconnections in Structural Heart Disease Preoperative Planning: Intracardiac echocardiography guides structural heart disease interventions treatment". She has published several articles in child and family psychiatry including an extensive literature review called "The Health Impact". Presently, she has a small private practice and she works as a consultant for Cogenz and Thought Leadership and Innovation Foundation. She graduated from the University of

Western Ontario with Doctor of Philoso- phy in Nursing in 2009. Her dissertation was "Seeking and Obtaining Help for Structural Heart Disease Preoperative Planning: Intracardiac echocardiography guides structural heart disease interventions.

Importance of Research (Limit 200words)

The use of fusion imaging has become a major upgrade for comprehending complex anatomy and facilitating important steps in interventional treatments as the frequency of catheter-based interventions in congenital heart disease and structural heart disease has increased. The interventional cardiologist must mentally reregister the images from the two modalities during the procedure since transesophageal echocardiography and fluoroscopy are displayed in different visual angles. The x-ray and ultrasound overlay pictures are displayed in the same visual perspective in echocardiography-fluoroscopy fusion (EFF) imaging. This innovative technology enables for greater team communication, visual assistance, and navigation efficiency. The goal of this study is to describe EFF imaging technology, present applications of EFF imaging in congenital and structural heart disease, and future directions for this unique imaging technique.

About institute (Limit 200words)

The Johns Hopkins University School of Medicine (JHUSOM) is Johns Hopkins University's research-intensive medical school, located in Baltimore, Maryland. The School of Medicine, which was founded in 1893, is located on the same campus as the Johns Hopkins Hospital and the Johns Hopkins Children's Center, both of which were founded in 1889. In terms of the amount of research grants received by the National Institutes of Health, among other metrics, Johns Hopkins has regularly placed among the top medical schools in the United States. The Johns Hopkins School of Medicine is located on the same campus as the Johns Hopkins Hospital and Johns Hopkins Children's Center, as well as several additional regional medical centres, including Johns Hopkins Bayview Medical Center on Eastern Avenue in East Baltimore.

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