T14.3 Simulation Training 13:15 Theatre 2

Understanding Complex Cardiac Interventions — Simulation for Transcatheter Aortic Valve Implantation

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Degenerative aortic stenosis (AS) is the commonest valvular heart disease in the elderly population, affecting about 3% to 6% of adults ≥75 years of age. Once patients with severe AS develop any of the triad of symptoms of congestive heart failure, syncope and exertional angina, their situation will be deteriorating rapidly with an average survival of 2 to 3 years and a high risk of sudden death. Surgical aortic valve replacement (SAVR) has been the gold standard for treatment of this group of symptomatic severe AS patients for the past 40 years. However, 27% to 41% of these patients declined SAVR due to underlying co-morbidities or deemed inoperable by the surgeons. Transcatheter aortic valve implantation (TAVI) has emerged as a less invasive, catheter-based alternative to treat this group of inoperable or high-risk symptomatic severe AS patients.

TAVI is a high-risk and highly complex procedure. It involves delivery of an 18-French (6mm in diameter) catheter, loaded with the TAVI device (a metal frame with three porcine or bovine valves), from the femoral artery through the descending and ascending aorta and all the way across the diseased aortic valve. The TAVI device will be released step-by-step and secured in the aortic area under X-ray guidance. The success depends on the meticulous handling of the device and attention to every detail of the procedure. Any error might result in catastrophic complications.

Simulation training of this complex cardiac interventional procedure is highly desirable to familiarise the operators of every detail step to achieve a successful procedure. The training is based on practicing with real devices and equipment, enabling learning real techniques with different settings, positioning, handling and deployment possibilities. This builds up confidence and enhances communication between members of the TAVI heart team. It also allows opportunities for the heart team to practice complex scenarios and complication management to further enhance the success and safety of the procedure.