Milestones

Introducing TAVI to Sri Lanka

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In recent times the field of cardiology in Sri Lanka has seen a great development. Its' importance being recognized has led to the setting up of a separate cardiac unit, which is the Institute of Cardiology, the premier national referral center for the entire country, located within the premises of the National Hospital of Sri Lanka. Many other dedicated cardiology units have been gradually introduced into the healthcare system, elsewhere.

From its inception, slowly but steadily, trending global novel technology and treatments have been introduced into the spectrum of cardiac care including latest medications (thrombolytic therapy), cardiac imaging, (echo cardiography from M mode to 2D and eventually 3D) and cardiac catheter facilities with a range of diagnostic and transcatheter based cardiac interventions.

Coronary intervention over the last decade has seen great expansion mainly due to the prevalence of ischaemic heart disease and the extent of the disease burden requiring the necessity of its treatment. Structural heart disease and its management via trans catheter based intervention has also expanded. However the relative discrepancy of incidence of structural heart disease in relation to coronary disease has resulted in a decelerated approach towards its development as well as low interest shown by cardiologists. This discrepancy has led to a select few tending to show interest in developing the non-surgical management of structural heart disease in Sri Lanka.

Noting this void in cardiac management and to ensure comprehensive cardiac care in our institute, several well-planned and spaced out work shops were carried out to introduce several transcatheter based interventions for structural heart disease management.

Thus in the last two decades, novel therapeutic modalities for structural heart disease management have been introduced into the country via the Institute of Cardiology.

Occluders for the management of atrial septal defects, ventricular septal defects, patent ducta arteriosus, paravalvular leaks and left atrial appendage closure along with stenting for coarctation of aorta were done and successfully continue to this day.

Valvular heart disease however remains rampant whether it be, paediatric, adolescent, adult or elderly. The definitive management for these, until recently, remained mostly surgical, while transcathter interventions remained mostly a method of buying time to postpone the ultimate eventuality. The worst to suffer in this environment are the elderly as they remain a point of challenge for the cardiothoracic surgeons as they make poor candidates for surgery under general anaesthesia due to age, prevalent co-morbidities, etc. Thus aortic stenosis in the elderly has become a management dilemma at both practical and ethical levels. However in the last 15 years there has been a silent revolution which has now become a great success globally. Namely the introduction and gradual evolution of Transcatheter Aortic Valve Implantation (TAVI). Alain Cribier, is considered the pioneer of TAVI as he did his 1st procedure in 2002 on a human subject, who was critically ill with advanced aortic stenosis and demonstrated clinical success. By doing so he proved to the world that replacement of valves can indeed be done using transcatheter techniques. In the subsequent years there has been development of available valves and in the present setting the safety profile of most meet or exceed that of its surgical counterpart. This has led leading global cardiac guidelines to recommend TAVI as a class I indication as a modality of treatment when all pre-requisites are fulfilled.

However in Sri Lanka there was a delay in introducing TAVI. The reasons for which are many and include patient factors, physician factors and availability of resources (e.g.: funding and non-availability of surgical cover due to theatre renovation and closures etc).

Unlike coronary intervention TAVI requires careful planning, meticulous investigation, collaboration with industry and cooperation of a multi-disciplinary heart team. Though in concept it appears and sounds simple, the process through a government funded health system requires meticulous planning.

In the preliminary stages, while recruiting patients we realized that there is a significant aortic stenosis burden in the country. The present ischaemic heart disease burden in Sri Lanka strains the cardiothoracic teams' capacity and to focus purely on valve intervention is not possible. We also noted the significant morbidity and mortality AS poses, with patients developing multiple life threatening complications. Some even died due to complications of AS while waiting for intervention either through surgery or TAVI. This only strengthened our resolve as we hastened the process to ensure timely introduction of TAVI. Training of interventionists, cardiothoracic surgeons, cardiothoracic anesthetists, medical & paramedical staff through workshops and introductory courses were organized to ensure that an adequate foundation was laid and forehand knowledge was gained prior to embarking on the practical application of this procedure, so as to ensure there will be very little left to chance.

The recruitment of a multi-disciplinary team of individuals to be a part of the "Heart team" is a pre-requisite to do TAVI anywhere globally. This led us to recruit enthusiastic individuals from diverse specialties (cardiologists, cardiac imaging specialists, cardiothoracic surgeons, cardiothoracic anesthetists, vascular surgeons, radiographers, cardiographers, cardiac physiotherapists etc.) and to short list the most needed and suitable candidates for our preliminary workshop.

With industry approved *proctors* giving guidance on the 2nd of September, 2018 three chosen patients successfully underwent TAVI and were discharged 1-2 weeks later, creating history in the field of cardiology in Sri Lanka.

That being said, we need to remember that the landscape of TAVI is evolving. Previously, only surgically high risk and surgically unsuitable patients were entertained as candidates for TAVI, but as of recent times even moderate risk patients are being considered. Trials have shown interest in considering even low risk category patients, implying that very soon TAVI will be the standard of care for aortic stenosis. Additionally TAVI is just the beginning, as the nitinol based artificial valves in play are now being used off label for valves other than the aortic. Most if not all valve interventions may one day become transcatheter based. At that time cardiologists in Sri Lanka must not be left behind and should stay updated and capable to continue this novel modality of therapy so as to ensure that comprehensive global standard cardiac care is given to Sri Lanka.

After lagging behind by 16 years or so Sri Lanka finally made its mark in management of structural heart disease. We now have to take steps to ensure that continuity is ensured. Just as closure of ASD using occluders has become a routine procedure in the catheter laboratories, one day TAVI will hopefully reach the same state of simplicity and acceptance among cardiologists. The only obstacle that we foresee is the cost. But as with all technology, through adequate competition and emerging alternate market contenders, adjustment in price is all but inevitable, by which time Sri Lanka will hopefully be an established TAVI center.

TAVI team 2018