Aortic valve stenosis (AS) is the most frequent aquired heart valve disease. It is a disease process in which there is mechanical obstruction to blood flow caused by a narrowing of the aortic valve (Figure 1). AS is the most common cause of calcific degeneration, which normally presents during the seventh and eighth decades of life. According to epidemiologic studies, the number of adults living above 75 years will double in 2050. According to some studies, degenerative aortic stenosis is on rise as well. It might reach 41% in a population in which the mean age is 81 years. The disease is characterized by a long asymptomatic phase followed by rapid progression of symptoms that consists of: angina, syncope and dyspnea. Survival after the onset of symptoms is 50% at two years and goes down to 20% at five. Until recently, Surgical Aortic Valve Replacement (SAVR) was the only curative treatment available and formed the backbone of management for most patients with AS.

Never less, previous studies published between 1995 and 2006 showed that 30-60% of AS are not referred to surgery. Despite the outstanding outcomes achieved by surgery in the young patients, this wasn’t enough to convince physician to refer all their diagnosed patients to the surgical team. Even when they did, this was delayed. As such, the accompanying comorbidities placed these patients at high or prohibitive risk for complications associated with surgical treatment. The high rates of postoperative death and high complication rates were high and rendered these patients not eligible for surgical replacement.

Thus, for years, these elderly patients were considered unsuitable for surgery and unsatisfactory medical therapy was their only choice. In 2002, Professor Alain Cribier, a French interventional cardiologist, had the brilliant idea of transcatherter aortic valve implantation (TAVI). It consists of puncturing a peripheral artery, introducing a biological valve fixed over a metallic stent inside the arterial bed, crossing the AS and implanting the neo valve without opening the chest (Figure 2). For the first time, TAVI came to complete the health care algorithm and proposes for the untreated population a real solution for their AS.

Time was needed for physicians to make this technique reproducible. It is worth noting that previous studies published between 1995 and 2006 showed that 30-60% of AS are not referred to surgery. Despite the outstanding outcomes achieved by surgery in the young patients, this wasn’t enough to convince physician to refer all their diagnosed patients to the surgical team. Even when they did, this was delayed. As such, the accompanying comorbidities placed these patients at high or prohibitive risk for complications associated with surgical treatment. The high rates of postoperative death and high complication rates were high and rendered these patients not eligible for surgical replacement.

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Well...

...in a “First look” report published in 2017 about long-term durability of the first generation of transcatheter heart valves, data revealed a significant increase in degeneration rates between 5-7 years after TAVI. Estimate of TAVI degeneration (resulting in at least moderate stenosis AND/OR regurgitation) was ~50% within 8 years. Studies are still ongoing to validate that new generations of these valves are giving better results.

It is the responsibility of the physicians to carefully choose their patients for TAVI and be aware of its indications. For this reason the AHA/ACC valvular heart disease management guidelines make a class I recommendation for a Heart Team approach to TAVI selection and care. The team should consist of an interventional cardiologist, a cardiac surgeon, a cardiac anesthesiologist, an imaging expert, and clinical support staff.

No doubt there is continual improvement in the transcatheter valves and their delivery system, the aim of which is offer this technology to a larger population with the privilege of treatment with minimal suffering and less pain. However, this technology still has imperative limitations and cannot be proposed to all patients with aortic valve stenosis. Until all limitations are surpassed and TAVI technology optimized, the advice remains to have multidisciplinary Heart Team discussions to optimize the selection process for the best TAVI candidates.

References

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