TRINITY heart valve prosthesis: a novel repositionable and retrievable transapical transcatheter aortic valve system.

Abstract:
Transcatheter aortic valve implantation (TAVI) has become a viable option for selected high-risk patients with severe and symptomatic aortic stenosis. First- and second-generation TAVI devices are either self- or balloon-expandable, and are often not repositionable or not fully retrievable, leading to suboptimal positioning in some cases. This may result in paravalvular regurgitation, AV conduction delay, or compromise of coronary perfusion. A broader application of TAVI requires advances in both valve and delivery systems. Therefore, in order to facilitate accurate positioning, to minimise paravalvular leakage, possibly to reduce the risk of AV conduction delay, and possibly to be able to abort the procedure, a "next-generation" TAVI system has been developed which is repositionable and retrievable, the TRINITY heart valve system. The TRINITY heart valve system was implanted in a first-in-human study using the transapical approach to demonstrate feasibility and procedural success. All endpoints were adjudicated according to VARC definitions at seven and 30 days. The TRINITY heart valve system was implanted in a 74-year-old patient with severe symptomatic aortic valve stenosis. In this case, repositioning of the TRINITY resulted...
in optimal position without paravalvular leakage and with perfect function. The TRINITY heart valve is a repositionable and retrievable TAVI system. Both the implantation result and short-term clinical and haemodynamic outcome were excellent.