A FRIENDLY TIE ON A HARD TAVI

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HISTORY AND PHYSICAL

We present a 69 year old patient, diagnosed with severe symptomatic aortic stenosis. In addition, she presents severe functional mitral insufficiency with moderate depression of left ventricular function. Comorbidities are previous thoracic radiotherapy treatment (breast cancer), bronchial asthma with steroid treatment and frailty.

The medical study is enhanced through a cardio TAC (Tomographic Axial Computerized), which shows adequate arterial diameter for femoral access. The distance of coronary arteries and the aortic annulus diameters are suitable for TAVI (Transcatheter Aortic Valve Implantation) , but the aorta is horizontalized and the aortic valve and annulus have heavy calcification.

The case is discussed in the heart team session indicating a TAVI implantation. Under general anesthesia, it is planned an implant of auto-expandable Corevalve Evolut R-26 through transfemoral access.

IMAGING

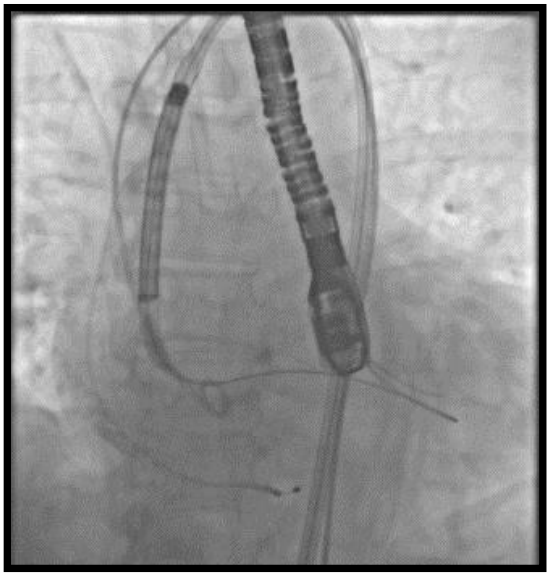

Figure 1: Detail sawing the Impossibility to cross the valve

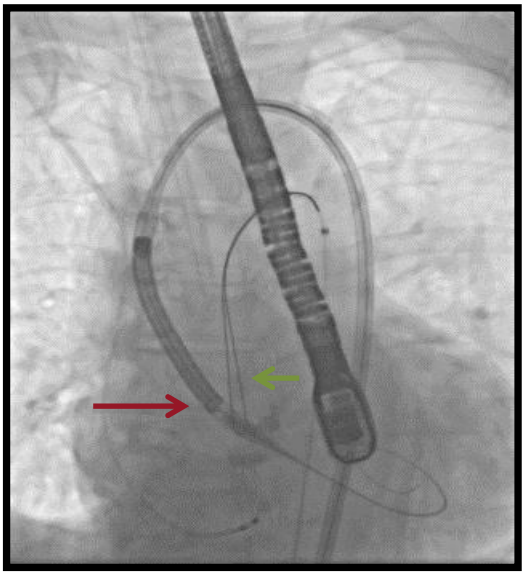

Figure 2: Corevalve catheter crossing trough the valve; transport system (red arrow), snare (green arrow).

INDICATION FOR INTERVENTION

The TAVI procedure is performed as the frail patient presented a severe symptomatic aortic stenosis with high risk according to the Euroscore.

INTERVENTION

1. First, a valvuloplasty with a Nucleus 18 mm balloon is performed. The Corevalve is advanced through the guidewire but it is impossible to cross the aortic valve because the horizontalized aorta and the calcified annulus.
2. Again we proceed to perform a second valvuloplasty with a bigger balloon, 20 mm of diameter. Once again we advance the Corevalve through the guidewire but it is impossible to cross the aortic valve, even after using a high support guidewire (Lunderquist). (Figure 1).

In this scenario the risk of either aortic annulus or aortic wall rupture, is very high if we push the valve ahead, therefor we decide to change the strategy.

1. We take out the TAVI catheter and through the guidewire already placed in the left ventricle we introduce a 30 mm snare reaching the ascending aorta.
2. Again through the guidewire we advance the CoreValve catheter and after placing the distal part of the Corevalve catheter above the aortic valve, using the snare, we apply a smooth traction elevating the transportation system of the Corevalve. Therefore repositioning the transport catheter coaxiality over the aortic valve, allowing the progression of the transport catheter through the aortic valve, releasing the Corevalve without any incidence.(Figure 2).

The percutaneous implant of the aortic valve has several key points which properly solved allow an optimal result; such mainly points are:

1. Vascular access
2. Recross of the aortic valve with the valve transport system.
3. Implant of the aortic valve with or without previous valvuloplasty.

However, there are several scenarios of special anatomic complexity: horizontalized aorta or very calcified valves or annulus, which can difficult enormously to cross the valve with the transport valve system. In spite of an optimal valvuloplasty or a high support guidewire, it is impossible to cross the native aortic valve with the Corevalve transport system. When we are in front of this situation, as occurred in our case, the aortic or annulus risk of rupture is too high because the main push force is transmitted directly over the aortic wall or aortic annulus.

Different maneuvers have been described to solve this problem such as clockwise or counterclockwise rotation of the transport system, as well as balloon inflation in ascending aorta, with the goal of modifying the direction of the transport system, so that the transport system progression is facilitated through the aortic valve.

However, in this case the approach was different. We decided to perform a simple maneuver, to date to our knowledge novel. This maneuver consisted of progressing a snare over the guidewire already placed in the left ventricle, open it in the ascending aorta. Then, we advance the transport Corevalve system through the guide and when we reached the level of the aortic valve, we strangled the distal part of the transport catheter, and with a soft traction of the system we obtained a more central position with respect to the valvular annulus. That change of the orientation of the transport system allowed a gently transport system progression reaching the right position to proceed to the Corevalve implantation.

LEARNING POINTS OF THE PROCEDURE

We describe a technique that offers a simple alternative for TAVI cases with horizontalized aorta and/or heavy calcified valve-annulus, in which the advance of the transport system through the aortic valve is impossible. Then, catching the distal part of the transport system with a snare, we are able to reposition the coaxiality of the system, modifying the transmission forces and allowing the advance of the transport system through the aortic valve. We entitle the case as “A friendly tie on a hard TAVI