The difficulties during transcatheter aortic valve implantation and appropriate precautions

Transcatheter aortic valve implantation (TAVI) was first applied in humans in 2002 by Cribier et al. (1) Ever since it became an effective treatment option for patients who have severe aortic stenosis with high surgical risk or contraindications to the standard surgery.

TAVI was performed in 48 high-risk (EuroSCORE 24.83±9.48) patients from October 2010 to July 2012 at our institution. The Edwards SAPIEN (n: 39) and the Medtronic CoreValve (n: 9) prostheses were implanted by transfemoral (n:46) or transapical (n:1) and subclavian (n:1) access (28 males and 20 females, mean age 77.40±6.16 years). The hemodynamic parameters and functional capacities of the patients improved and our success rate was parallel to the other institutions (2).

In one of our patients, who had a bilateral aorta-iliac vascular graft, a transfemoral TAVI was successfully performed through the left femoral artery and the left graft. An Amplatz super stiff guide wire used to support the valve system further and to straighten the arterial tortuosity for this and the other patients who had similar iliac artery tortuosity. In another patient with bilateral iliac artery stenosis, transfemoral TAVI was successful following percutaneous balloon dilatation (3). TAVI still can be applied successfully together with peripheral arterial percutaneous intervention. Since the presence of concomitant peripheral artery disease also increases the procedural risk of TAVI, a combined strategy to treat both entities needs to be carefully considered. A female patient with Heyde Syndrome, in which gastrointestinal (GIS) bleeding is common due to GIS angiodyplasia, had Edwards SAPIEN valve placed and thus, both the aortic stenosis and GIS bleedings were treated by this intervention.

TAVI is an alternative therapy in patients with severe aortic stenosis (AS) and high surgical risk (4). Despite continuous improvements in operators’ expertise and device technology, complications associated with TAVI are not uncommon. Pericardial effusion and tamponade developed in one of our patients four hours following the procedure. This complication was attributed to the placement of temporary pacemaker. It was sufficiently treated by pericardiocentesis. Left main coronary artery occlusion was caused by a plaque shift from native valve during the implantation of an Edwards SAPIEN valve in one of our female patients (5). This complication was immediately recognized and a stent was implanted. The best way to avoid this extremely serious complication is to perform a preliminary multislice CT scan measurement of the distance from the aortic annulus to the coronary ostia, which should be greater than 8 mm. Coronary artery cannulation was the main problem in such complication. In one of our patients, Edwards SAPIEN prosthetic valve dislocated to the left ventricular outflow tract with hemodynamic collapse four hours following the implantation and the valve embolized into the left ventricle (LV) during resuscitation. During the implantation of Edwards SAPIEN prosthesis, the fluoroscopic angle in which three of the valves are situated on the same plane should be used. Approximately two-thirds of the stent should be positioned below the plane of the leaflet insertion for optimal positioning prior to balloon inflation. The surgical repair was successful. A multidisciplinary team with surgical backup should be ready during the TAVI.

TAVI is becoming a more frequent procedure in the country. Overall, 350 cases have been performed so far. The indication for implanting this device should be assessed carefully by the cardiac surgeons and car...