Experiences of Transcatheter Aortic Valve Implantation with Severe Aortic Stenosis

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Aortic stenosis is the most common and dangerous native valve disease; it affects 2-4% of patients over 65 years of age¹.However, the surgical procedure leads the patients to undergo great risks especially in the elderly population and in patients with concomitant disorders² .In this retrospectively conducted study, we described and analyzed our experience on TAVI procedures, performed in our hospital.

Materials and methods:The approval of the Ethics Committee, June 2012 and December 2013 were reviewed retrospectively. Demographic data, STS, EuroSCORE, aortic valve pressure gradients, the methods of anesthesia and monitoring and postoperative complications were collected.All data were expressed as mean ± standard deviation.

Results:Among 57 remaining patients in whom data was collected, mean age was found as 78.6 ± 6.7 years and the 37 were female.The mean pulmonary artery pressure was 46.9 ± 14.2 mmHg,mean pressure gradient (PG) was 48.8 ± 10.7 mmHg, whereas the peak PG was 75.5 ± 17.1 mmHg prior to the TAVI procedure; left ventricular ejection fraction before the TAVI procedure was calculated as 51.2 ± 14.2 %.Analysis of the patient charts revealed a mean value for STS as 7.8 ± 4.7 and a mean value for EuroSCORE as 34.9 ± 14.1 %.In all patients, a probe for transesophageal echocardiography was inserted for real-time monitoring, together with a temporary pacemaker. Implanted valves were expandable CoreValve in 60%, and the Edwards Sapiens XT Valve in 40%.Following completion of the procedure, final femoral angiography was performed in order to verify that there were no vascular injuries. The patients were transferred coronary ICU after extubation. During postoperative period, minor complications were encountered in 11% patients.

Conclusion: We determined that TAVI was a procedure with low rate of complications in patients with severe aortic stenosis when the steps of the procedure had been followed meticulously, according to the results of our retrospective study. The anesthesiologist should be a key member of the staff prior, during, and following the intervention. The ongoing prospective trials and retrospective research together with the debate on indications, type of the anesthesia, location where the procedure is held etc, will serve to shed light on the evolvement of this relatively novel technique.

Table 1. Demographic and clinical characteristics of our patients

	n	%	Mean ± SD (range)
Age (years)			78.6 ± 6.7 (55 – 91)
Gender			
Female	37	65	
Male	20	35	
Height (cm)			160.5 ± 9.5 (138 – 180)
Weight (kg)			66.3 ± 11.8 (45 – 86)
Body mass index (kg/m ²)			25.7 ± 4.3 (20 – 37)
Hypertension	49	86	
Diabetes mellitus	14	25	

Table 2. Risk scorings, pre-TAVI mean and peak pressure gradients, valve types, femoral access route and postoperative complications of the patients

	n	%	Mean ± SD (range)
Pre-TAVI EF (%)			51.2 ± 14.2 (20 – 74)
Pre-TAVI mean PG (mmHg)			48.8 ± 10.7 (28 – 75)
Pre-TAVI peak PG (mmHg)			75.5 ± 17.1 (39 – 120)
Pre-TAVI PAP (mmHg)			46.9 ± 14.2 (25 – 80)
STS			7.8 ± 4.7 (1.9 – 27.2)
Logistic EuroSCORE (%)			34.9 ± 14.1 (4.6 – 65.7)
Valve Type			
CoreValve	34	60	
Edwards Sapiens	23	40	
Method of femoral access			
Percutaneous femoral access	8	14	
Femoral arterial cut-down	49	86	
Postoperative complication	6	11	

Pre-TAVI: before trans-catheter aortic valve implantation; EF: ejection fraction; PG: pressure gradient;; PAP: pulmonary arterial blood pressure; EuroSCORE: European System for Cardiac Operative Risk Evaluation

Figure 2: Intraoperative RBC usage
RBC: red blood cell

Figure 1: Periprocedural events and intraoperative need for positive inotropic infusion
AF; atrial fibrillation,VF; ventricular fibrillation

References: 1) Ruggeri L et al. HSR Proc Intensive Care Cardiovasc Anesth. 2012; 4: 40-6.
2) Covello RD et al. Minerva Anesthesiol. 2010; 76: 100-8.