

Valve-in-Valve-in-Valve(V-i-V-i-V) TAVI procedure in significant paravalvular leakage

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Introduction: Transcatheter aortic valve implantation(TAVI) is established as an alternative to surgical aortic valve replacement for the treatment of aortic stenosis(AS) in elderly patients with high surgical risk. However, paravalvular leakage(PVL) is one of major complication after TAVI and has been reported in 15~20% of patients who received TAVI. Nowadays, valve-in-valve(V-i-V) procedure has emerged as a means of rescue procedure for improper function of initially implanted bioprosthesis. We introduced a case of severe hemolytic anemia with severe PVL after TAVI-in-TAVI and corrected it using Valve-in-valve-in-valve(V-i-V-i-V) procedure.

Case: An 80-year-old man presented with aggravating dyspnea, NYHA class III, and a history of HTN. Severe AS with heavy calcification and mild to moderate AR was diagnosed and he received TAVI but, PVL developed after 1st TAVI and 2nd TAVI was done(V-i-V, two of 29mm sized SAPIEN 3) on same day on June 12th, 2017. After 1 month later, abrupt anemia was detected (Hb 10.7->8.0g/dL). Laboratory values showed normocytic anemia with high reticulocytes(5%), elevated LDH(641->1820IU/L), low haptoglobin(3mg/dL) and schistocytes(2-5/HPF) shown on peripheral blood smear. And echocardiography revealed significant PVL between two of SAPIEN3s. All findings suggested hemolytic anemia and we monitored him with close follow-up every two months. However, hemolytic anemia had persisted for 1 year. Eventually, he required transfusion with a Hb of 7g/dL due to dizziness and follow-up TEE showed severe PVL with 3 jets and circumferential extent > 30%. We decided to perform V-i-V-i-V TAVI considering old age and high risk of surgery. V-i-V-i-V TAVI was performed successfully with a 29mm sized self-expandable CoreValve Evolut R valve on September 14th, 2018 and soon after the procedure, amount of PVL was decreased. One month later, hemolytic anemia regressed and now, he is doing well so far.

Discussion: This study reports a case of severe PVL with severe intravascular hemolysis after TAVI-in-TAVI and correction using Valve-in-valve-in-valve(V-i-V-i-V) TAVI procedure.

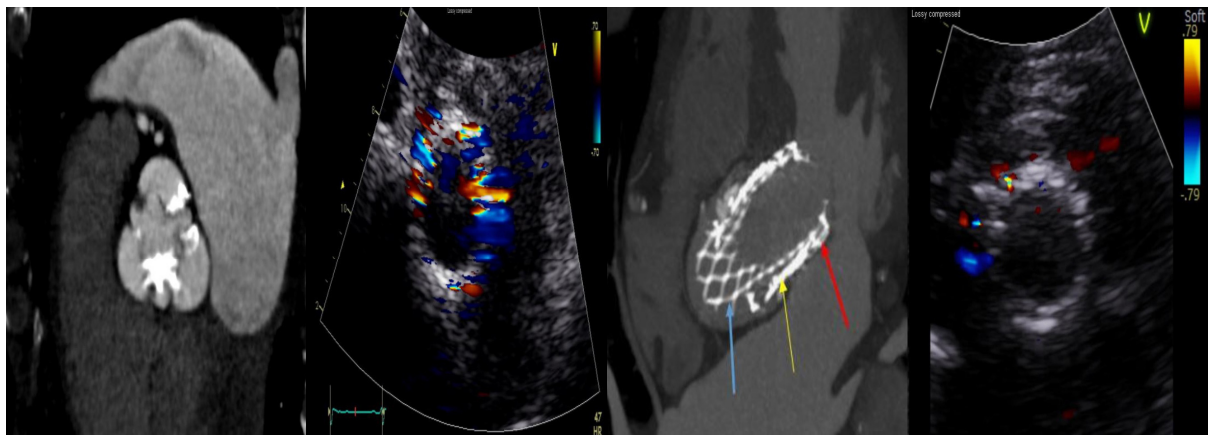


Figure 1. Heavy calcification of AV before TAVI(17.05.24)

Figure 2. Color doppler of severe PVL after TAVI-in-TAVI(18.09.12)

Figure 3. Coronary CTA after V-i-V-i-V(Red:1st valve, Yellow : 2nd valve, Blue : 3rd valve) (19.10.04)

Figure 4. Minimal PVL after V-i-V-i-V (18.09.17)