Transcatheter aortic valve implantation following aortic valve repair

Dubravka Šušnjar[1]*, Daniel Unić[1], Josip Varvodić[1], Davor Barić[1], Marko Kušurin[1], Savica Gjeorgjievska[1], Gloria Šestan[1], Nikola Slišković[1], Igor Rudež[1,2]

[1]Dubrava University Hospital, Zagreb, Croatia
[2]University of Zagreb, School of Medicine, Zagreb, Croatia

KEYWORDS: aortic valve reconstruction, annuloplasty, aortic stenosis, transcatheter implantation.

CITATION: Cardiol Croat. 2025;20(5-6):165. | https://doi.org/10.15836/ccar2025.165

***ADDRESS FOR CORRESPONDENCE:** Dubravka Šušnjar, Klinička bolnica Dubrava, Av. G. Šuška 6, HR-10000 Zagreb, Croatia. / Phone: +385-1-2902-444 / E-mail: dubravka.susnjar@gmail.com

ORCID: Dubravka Šušnjar, https://orcid.org/0000-0002-9644-9739 • Daniel Unić, https://orcid.org/0000-0003-2740-4067
Josip Varvodić, https://orcid.org/0000-0001-6602-699X • Davor Barić, https://orcid.org/0000-0001-5955-0275
Marko Kušurin, https://orcid.org/0000-0001-5690-9924 • Savica Gjeorgjievska, https://orcid.org/0000-0002-4304-1852
Gloria Šestan, https://orcid.org/0000-0002-6245-5508 • Nikola Slišković, https://orcid.org/0000-0002-9796-736X
Igor Rudež, https://oricd.org/0000-0002-7735-6721

Introduction: Aortic valve repair (AVRep) is an excellent method, for treatment of patients with aortic regurgitation, offering good long-term outcomes with low incidence of valve -related complications. Its feasibility has been reported in both tricuspid and bicuspid valves with excellent results.[1,2]

Case report: 59-year-old men underwent aortic valve repair with an annuloplasty ring and reimplantation of coronary arteries (Lansac technique) in 2016 due to bicuspid aortic valve with moderate to severe aortic valve regurgitation. Reconstruction was done with the Coroneo Extraaortic Ring (29 mm) and the Gelweave Valsalva graft (30 mm). Eight years later, the patient returned with symptoms of shortness of breath and exertion intolerance. Transthoracic echocardiography showed severe concentric hypertrophy of the left ventricle, moderate diastolic dysfunction, with preserved ejection fraction (LVEF 50%). Aortic valve was severely degenerative altered, hyperechogenic, with reduced cusp separation and severe aortic stenosis with mild to moderate aortic regurgitation. Aortic valve peak velocity of 5.5 m/s, and peak/mean gradients were 121/76 mmHg. Coronary angiography ruled out coronary disease. Preoperative computed tomography shows significantly calcified aortic valve, CACS 6144 (**Figure 1**). Due to the patient comorbidities and risk of resternotomy the transcatheter aortic valve implantation was chosen as the optimal therapeutic option. Bioprosthetic balloon-expandable aortic valve (Meril Octator TVA 30.5 mm) was delivered via a transfemoral approach without complications. Control echocardiography showed correct valve position, with peak velocity of 1.8 m/s, peak/mean gradients were 20/11 mmHg, valve area was 2.2 cm^2 and trace of paravalvular leak angio 1+.

Conclusion: Transcatheter implantation of aortic valve following aortic valve repair with annuloplasty ring may be a reasonable option for patients with high perioperative risk for reoperative AVR. Extraaortic ring provides extra support for transcatheter valves if mechanism of failure is recurrent aortic regurgitation.

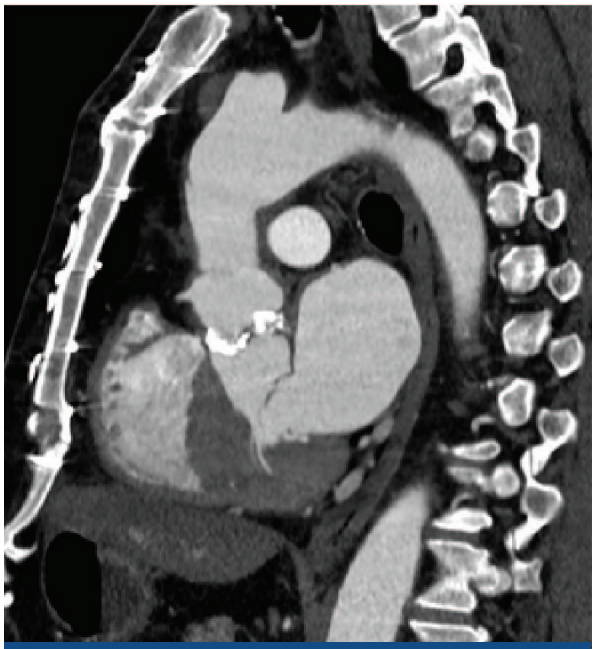

FIGURE 1. Preoperative computed tomography shows a significantly calcified aortic valve.

RECEIVED:
March 16, 2025

ACCEPTED:
April 2, 2025

LITERATURE

1. Lansac E, Di Centa I, Vojacek J, Nijs J, Hlubocky J, Mecozzi G, et al. Valve sparing root replacement: the remodeling technique with external ring annuloplasty. Ann Cardiothorac Surg. 2013 Jan;2(1):117-23. https://doi.org/10.3978/j.issn.2225-319X.2013.01.15
2. Thyregod HG, Steinbrüchel DA, Ihlemann N, Nissen H, Kjeldsen BJ, Petursson P, et al. Transcatheter Versus Surgical Aortic Valve Replacement in Patients With Severe Aortic Valve Stenosis: 1-Year Results From the All-Comers NOTION Randomized Clinical Trial. J Am Coll Cardiol. 2015 May 26;65(20):2184-94. https://doi.org/10.1016/j.jacc.2015.03.014