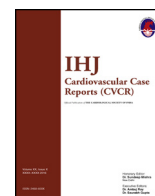




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The use of embolic deflector device in Transcatheter Aortic Valve Implantation (TAVI)

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An 80-year-old female with symptomatic severe aortic stenosis (mean pressure gradient – 46 mmHg, AVA – 0.8 cm²) was planned for Transcatheter Aortic Valve Implantation (TAVI), as she was considered too high risk for surgical AVR (logistic euroscore – 26). Her echocardiogram also showed apical hypokinesia with mural thrombus. Her coronary angiogram showed pruning of a small LAD without any significant stenosis. Considering the risk of embolization, it was decided to use an embolic protection or deflector device to prevent procedure related CVA. Through a right radial approach, a 6F Embrella (Edwards Lifescience, USA) deflector device was positioned in the arch of aorta covering all three main branches of the aorta. This was followed by balloon aortic valvuloplasty with a 20 mm balloon and then a 23 mm balloon expandable Sapien 3 valve (Edwards Lifescience, California) was deployed successfully via transfemoral approach, with careful manipulation in arch of aorta to avoid scraping the device (Fig. 1). Embrella device was removed at the end of the procedure. The patient was discharged after 2 days and doing well.

Embolic protection or deflector devices are used to prevent CVA due to mechanical shedding of debris from the aortic arch or calcified native valve during TAVI implantation. In this case, however, there was another reason to use the device, in the form of LV thrombus. Embrella device consists of two petals (made of polyurethane membrane), which are connected by a nitinol frame and the device is deployed at the outer curvature of the aortic arch. The polyurethane membrane has 100-micron size pores to ensure proper blood circulation beyond the device Fig. 2, Panel A.

Triguard device, on the other hand, is delivered trans-femorally with a 9F sheath. This is positioned in aortic arch and anchored by an atraumatic stabilizer in the innominate artery. The filter portion has 130-micron pores, which have anti-thrombotic coating in it Fig. 2, Panel B. Bilateral carotid filters, theoretically, are not totally protective of CVA as the vertebral artery that supplies most part of the posterior brain arises from subclavian artery.

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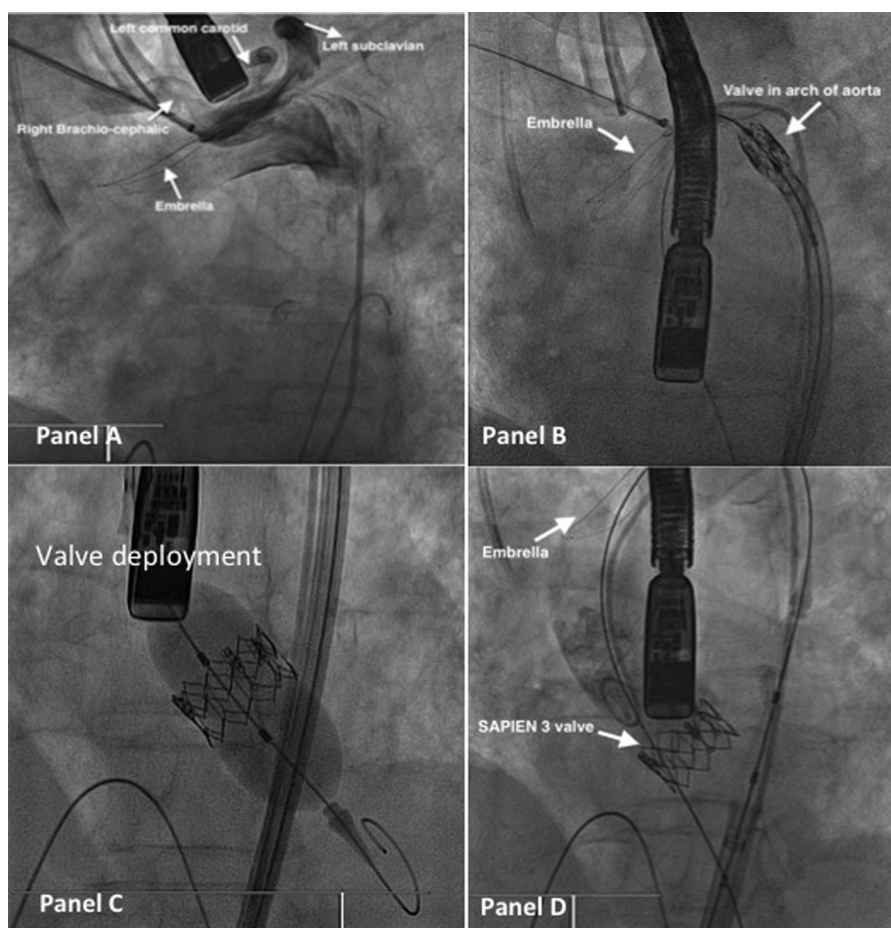


Fig. 1. (Panel A) Embrella device in arch of aorta covering all 3 main branches. (Panel B) Sapien 3 valve taken through arch of aorta on the delivery sheath with screening. (Panel C) Deployment of Edwards Sapien TAVI valve with wire position in LV. (Panel D) Post deployment aortogram showing well positioned TAVI valve.

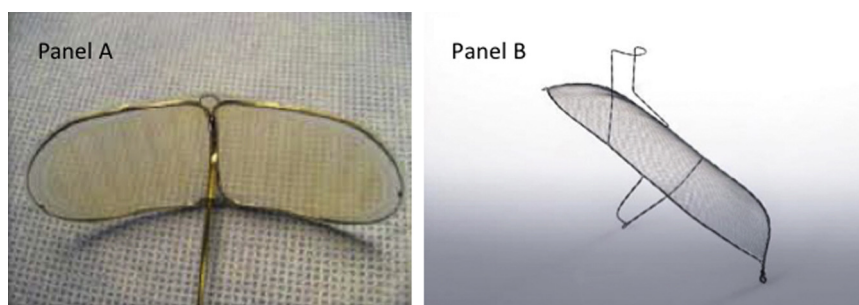


Fig. 2. (Panel A) Embrella device. (Panel B) Triguard system.

Conflicts of interest

The authors have none to declare.