

Transcarotid access for transcatheter aortic valve implantation with a Navitor device

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The current European Society of Cardiology (ESC) guidelines for valvular heart disease strongly recommend transcatheter aortic valve implantation (TAVI) in patients older than 75 years or in those at high risk or unsuitable for surgery if transfemoral (TF) access is feasible [1]. However, some patients still have contraindications to the TF approach, and some guidelines allow non-TF TAVI to be considered. Transcarotid (TC) TAVI introduced by Modine et al. [2] appeared to be a meaningful alternative for non-TF patients, yet it still has not been widely adopted.

A 73-year-old female was admitted from a remote hospital with a diagnosis of severe aortic valve stenosis (AVS). On admission, the patient presented symptoms of chronic heart failure New York Heart Association (NYHA) Functional Classification class III. Echocardiography confirmed severe AS with mean gradient of 57 mm Hg and aortic valve area of 0.7 cm² with preserved left ventricular (LV) ejection fraction. Electrocardiogram documented atrial fibrillation and LV hypertrophy. Coronary angiography did not show any significant lesions in the epicardial coronary arteries. Carotid Doppler ultrasound showed patent arteries with no significant lesions. The patient suffered from multiple comorbidities, which included diffuse osteoporosis resulting in compression fractures of her spine leading to cervical spinal stenosis, end-stage renal disease requiring permanent dialysis, long-life immunosuppressive therapy following a kidney transplant in 1998, chronic pancreatitis,

hypertension, and hypercholesterolemia. Finally, based on a computed tomography (CT) scan, the patient was diagnosed with multilevel, bilateral, severely calcific iliac and femoral stenoses (Figure 1A, red arrows). Taking into consideration the patient's overall condition and comorbidities, the institutional Heart Team scheduled the patient for a TAVI procedure through right TC access, which was shown on CT to be free of significant atherosclerotic plaques (Figure 1B).

Due to the high risk of spinal cord damage during the potential intubation for general anesthesia, the team of anesthesiologists decided to use only local anesthesia with superficial intermediate cervical plexus nerve block. The right brachial artery was used for contrast injections during valve positioning. The right common carotid artery was then surgically exposed at the medial border of the sternocleidomastoid muscle and punctured with final insertion of an 8 F sheath (Figure 1C). The aortic valve pre-dilatation was performed with an 8 F compatible Valver valvuloplasty balloon 20 × 45 mm (Balton, Warszawa, Poland) followed by sheathless delivery and implantation of a Navitor 25 (Abbott, Plymouth, MN, US) percutaneous valve (Figure 1D–F) [3]. The procedure was uneventful, the implanted valve position was optimal with no perivalvular regurgitation and no coronary obstruction. The patient was discharged from the hospital with an immediate significant improvement in exercise capacity, with no signs of neurologic adverse events. No car-

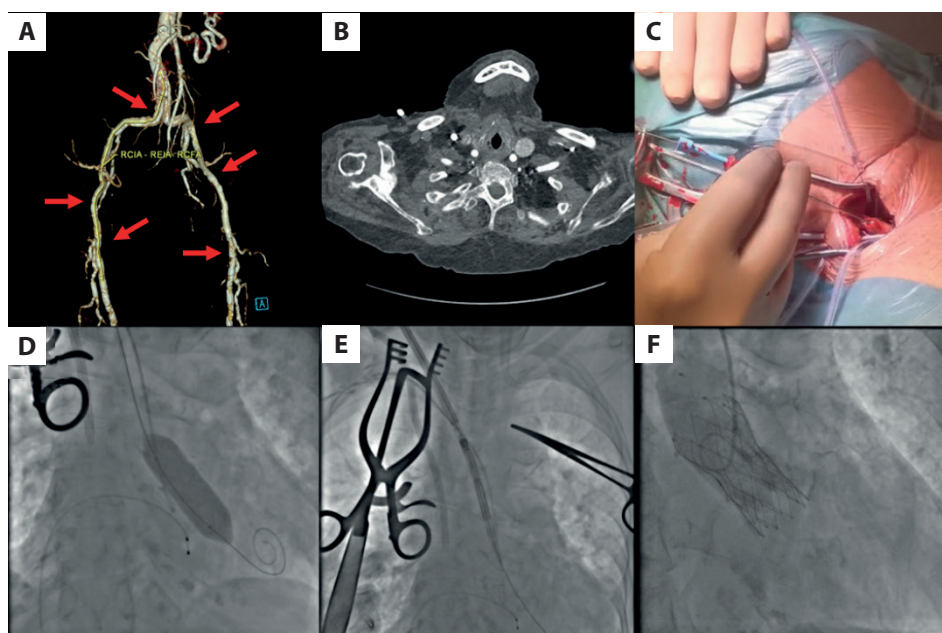


Figure 1. **A.** Computed tomography angiography with 3D reconstruction shows diffuse calcifications of stenotic iliac and femoral arteries which rendered the patient not suitable for transfemoral transcatheter aortic valve implantation (TAVI) (red arrows). **B.** Computed tomography angiography of the carotid vessels confirming appropriate vessel size and lack of significant plaques within the right common carotid artery. **C.** Transcarotid access for the TAVI procedure. **D.** Transcarotid access — balloon aortic valvuloplasty. **E.** Transcarotid access — valve delivery and positioning. **F.** Transcatheter aortic valve implantation — transcatheter heart valve successfully deployed

diovascular complications were observed up to a recent 12-month clinical follow-up that confirmed sustained Navitor 25 optimal performance.

Transcarotid TAVI under local anesthesia can be feasible and safe. It can be considered a secondary technique in frail, high-risk patients not suitable for TF TAVI [4]. It must be admitted, however, that randomized data comparing TC with TF and other non-TF approaches are lacking.

Article information

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