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Transcarotid access for transcatheter aortic valve implantation with Navitor device

Short title: Transcarotid TAVI with Navitor

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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 feasible for transfemoral (TF) access [1]. However, some subset of patients still presents a contraindication to TF approach and same 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 have been widely adopted. A 73-year-old female was admitted from remote hospital with a diagnosis of severe aortic valve stenosis (AS). At admission the patient presented symptoms of chronic heart failure New York Heart Association (NYHA) Functional Classification class III. The echocardiography confirmed severe AS with mean gradient of 57 mmHg 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 reveal any significant lesions in epicardial coronary arteries. Carotid doppler ultrasound revealed 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 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). Taking into consideration the overall patient's condition and comorbidities, the institutional Heart Team scheduled the patient to TAVI procedure through right TC access, which was proven by 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 anaesthesia, the team of anaesthesiologists decided to use only local anaesthesia with superficial intermediate cervical plexus nerve block. 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 a final insertion of the 8F sheath (Figure 1C). The aortic valve pre-dilatation was performed with 8F compatible Valver valvuloplasty balloon 20 × 45 mm (Balton, Warszawa, Poland) followed by sheathless delivery and implantation of Navitor 25 (Abbott, Plymouth, MN, US) percutaneous valve (Figure 1 D–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 of exercise capacity with no signs of a neurologic adverse event. No cardiovascular complications were observed up to a recent 12 months clinical follow up with confirmed sustained Navitor 25 optimal performance.

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

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REFERENCES

1. Vahanian A, Beyersdorf F, Praz F, et al. 2021 ESC/EACTS Guidelines for the management of valvular heart disease. *Eur Heart J.* 2022; 43(7): 561–632, doi: [10.1093/eurheartj/ehab395](https://doi.org/10.1093/eurheartj/ehab395), indexed in Pubmed: [34453165](https://pubmed.ncbi.nlm.nih.gov/34453165/).
2. Modine T, Lemesle G, Azzaoui R, et al. Aortic valve implantation with the CoreValve ReValving System via left carotid artery access: first case report. *J Thorac Cardiovasc Surg.* 2010; 140(4): 928–929, doi: [10.1016/j.jtcvs.2010.03.001](https://doi.org/10.1016/j.jtcvs.2010.03.001), indexed in Pubmed: [20381818](https://pubmed.ncbi.nlm.nih.gov/20381818/).
3. Grygier M, Olasińska-Wiśniewska A, Misterski M, et al. Navitor valve — a new TAVI solution for patients with aortic stenosis. *Kardiol Pol.* 2021; 79(11): 1278–1279, doi: [10.33963/KP.a2021.0086](https://doi.org/10.33963/KP.a2021.0086), indexed in Pubmed: [34392515](https://pubmed.ncbi.nlm.nih.gov/34392515/).
4. Wiktorowicz A, Kleczynski P, Dziewierz A, et al. Impact of frailty on mortality after transcatheter aortic valve implantation. *Am Heart J.* 2017; 185(7): 52–58, doi: [10.1016/j.ahj.2016.12.005](https://doi.org/10.1016/j.ahj.2016.12.005), indexed in Pubmed: [28267475](https://pubmed.ncbi.nlm.nih.gov/28267475/).

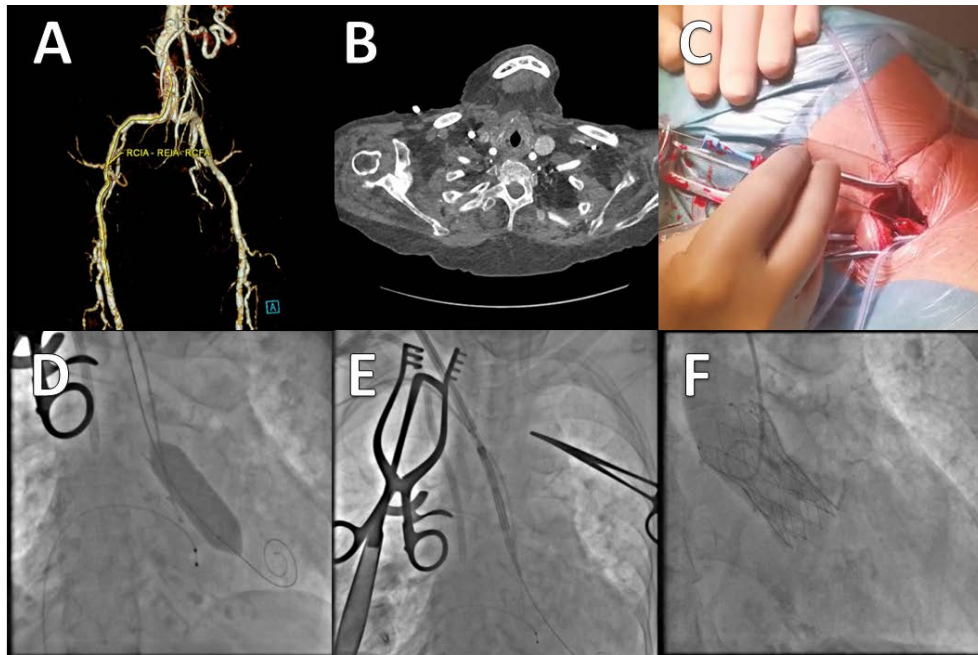


Figure 1. **A.** Computed tomography angiography with 3D reconstruction, diffuse calcifications of stenotic iliac and femoral arteries making the patient not suitable for transfemoral transcatheter aortic valve implantation (TAVI). **B.** Computed tomography angiography of the carotid vessels confirming appropriate vessel size and lack of significant plaques within right common carotid artery. **C.** Transcarotid access for 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