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STUDIUM PRZYPADKU / *CLINICAL VIGNETTE*

CoreValve bioprosthesis implantation from direct aortic approach in a patient with patent coronary artery bypass grafts

Implantacja sztucznej zastawki aortalnej typu CoreValve z bezpośredniego dostępu aortalnego u pacjenta z drożnymi pomostami aortalno-wieńcowymi

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A 63 year-old man with a history of quintuple coronary artery bypass graft (CABG) surgery (LIMA–LAD, Ao–OM, Ao–Dg, Ao–PDA, Ao–PL) in 1999 and aortobifemoral bypass surgery in 2007 was admitted to our centre with severe symptomatic aortic stenosis. Transthoracic ultrasound showed a maximum transaortic gradient of 69 mm Hg, mean gradient of 39 mm Hg and aortic valve area of 0.6 cm^2; aortic annulus was 25 mm, and left ventricular ejection fraction (LVEF) was 25%. Due to the high operative risk (EuroScore 11) and the possibility of damaging the patent grafts during sternotomy, the patient was disqualified from reoperation. Instead, the Heart Team qualified the patient to a transcatheter aortic valve implantation (TAVI) procedure. Coronary angiography revealed four patent coronary grafts (all except Ao-Dg). CT revealed both subclavian arteries with diameters below 6 mm. Because safe vascular access was not available, we decided to perform the procedure via direct aortic access. The procedure was performed by two cardiac surgeons and two interventional cardiologists. Access to the aorta was obtained by upper T-shaped ministernotomy (Fig. 1). Opening of the pericardial sac revealed an ascending aorta with many adhesions. After performing TEE ultrasound and angiographic measurements, the ascending aorta was punctured (Fig. 2) and an 18 F vascular sheath was inserted (Fig. 3). A self-expanding CoreValve 29 mm bioprosthesis was implanted, in a manner analogous to transfemoral access procedures, with very good results: maximal and mean transaortic gradients dropped to 29 mm Hg and 16 mm Hg, respectively (Fig. 4). The aorta was closed with a purse string suture. Total duration of the procedure was 90 min. During the postoperative period, the patient did not require mechanical ventilation or infusion of catecholamines. In consecutive ultrasound examinations we observed an improvement in LVEF and a decrease of left ventricular end diastolic diameter. A cardiac resynchronisation therapy defibrillator was implanted 6 days after the procedure due to a third degree atrioventricular block and wide QRS complex (160 ms). The patient was discharged home 10 days after the initial procedure. TAVI procedures are typically performed through transfemoral access. However, this access site is not available in patients with a history of aortobifemoral bypass implantation due to the obvious risk of damaging the graft. Other contraindications for this access site include tortuous and narrow (< 6 mm) femoral arteries, peripheral atherosclerotic disease, and aortic aneurysms. Until recently, subclavian and transapical approaches were the only alternative access sites for patients eligible for TAVI with no vascular access. However, there is still a large group of patients with contraindications for these access sites. A narrow subclavian artery or a patent coronary graft originating in the left internal mammary artery preclude the possibility of subclavian access. Transapical approach carries a risk of serious complications such as arrhythmias, hypokinesia or akinesia of LV apex, myocardial tears and apical false aneurysm. Manipulations on fragile tissue of LV apex may also deteriorate its EF, particularly in patients with previously diagnosed heart failure. Direct access to the ascending aorta through partial sternotomy or right minithoracotomy allows the TAVI procedure in patients with no other vascular access sites. Moreover, it does not involve manipulation on atherosclerotic aortic arch, which may decrease neurological complications after percutaneous valve implantation. There are few reports of direct aortic TAVI procedures in patients after CABG. However, when conducted by an experienced cardiac surgeon, this access site appears safe, and allows a comfortable working environment for an interventional cardiologist.

Figure 1. Upper T-shaped ministernotomy

Figure 2. Puncture of the ascending aorta

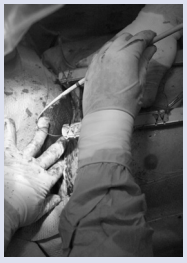

Figure 3. Insertion of the 18 F vascular sheath

Figure 4. CoreValve bioprosthesis being introduced into the ascending aorta

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Conflict of interest: *none declared*