

A valve-in-valve (ViV) transcatheter aortic valve implantation with lithotripsy-assisted transfemoral approach

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Received 21 May 2020; first decision 9 June 2020; accepted 13 July 2020; online publish-ahead-of-print 7 September 2020

A 77-year-old man was admitted in Cardiology ward at New Cross Hospital with acute heart failure symptoms. This patient had a background of aortic valve replacement with a 23 mm Epic prosthesis and previous bypass grafting. On this admission, his echocardiogram revealed an aortic valve area of 0.42 cm^2 and a mean pressure gradient of 53 mmHg. His computed tomography has shown bilateral diffuse calcific atheromatous ilio-femorals with a circumferential thick calcified layer with a lumen of 3.7 mm (Figure 1). Also the right subclavian was extremely tortuous and left subclavian had moderate calcification. The left internal mammary artery (LIMA) was patent and was directly under sternum. Carotids were moderately narrowed and calcific too. This case was turned down for surgery due to comorbidities and the LIMA's anatomical position. Also, the coronary height was measured giving sufficient space from the annulus thus considered low risk for coronary obstruction. Whilst still inpatient, he did not respond well to diuresis with relapse of pulmonary oedema. Trans-catheter aortic valve implantation eventually took place with a 7.0 mm lithotripsy balloon (shockwave, Medical, USA) via the right femoral artery through a 9 Fr sheath (Figure 2).^{1,2} A decision for a lithotripsy was made due to the circumferential nature of the calcification, a condition which is favourable for shock-wave therapy, and it was based upon our previous experience with this technique and on our liaison with the vascular and interventional radiology team. In total, 80 shocks were delivered up to the level of the abdominal aorta immediately above the bifurcation. Shocks were delivered at 4 atm. with the balloon expanded to 8 atm. Each time completion of 10 shocks delivered. A gore-sheath was advanced with gentle push and twist over a safari stiff wire. A 23 Evolut R of Medtronic delivered through the previously narrowed prosthetic valve.³ The post-deployment valve was slightly constricted with moderate aortic regurgitation, therefore a Numed balloon 22 mm was utilized for post-



Figure 1 Severely calcific aorta and right iliac.

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Handling Editor: Aref Bin Abdulhak

Peer-reviewers: Rania Hammami; Pierre Deharo; Georg Goliasch

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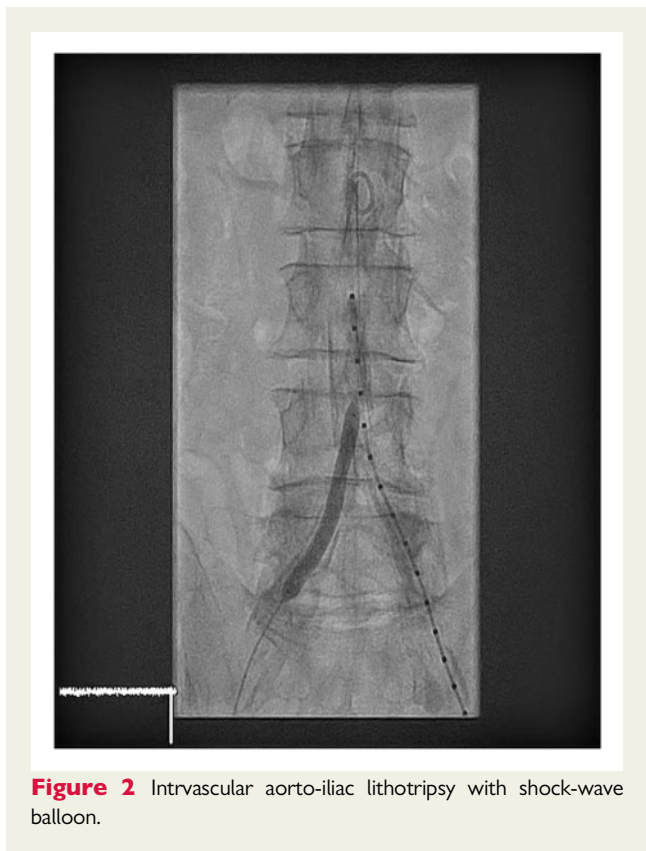


Figure 2 Intravascular aorto-iliac lithotripsy with shock-wave balloon.

dilatation eventually achieving an optimal result without aortic regurgitation.

Supplementary material

Supplementary material is available at *European Heart Journal - Case Reports* online.

Slide sets: A fully edited slide set detailing this case and suitable for local presentation is available online as **Supplementary data**.

Consent: The author/s confirm that written consent for submission and publication of this case report including image(s) and associated text has been obtained from the patient in line with COPE guidelines.

Conflict of interest: none declared.

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