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Images in Cardiology

Iatrogenic mitral stenosis following transcatheter aortic valve replacement (TAVR)



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ARTICLE INFO

Article history:

Received 20 January 2015

Accepted 3 February 2015

Available online 4 March 2015

ABSTRACT

A 57 year old female underwent transcatheter aortic valve replacement (TAVR) for severe aortic stenosis. Mild iatrogenic mitral stenosis was noted intraoperatively. Attempts to reposition the device were hampered by aortic angulation. One year later, severe mitral stenosis was confirmed on transoesophageal echocardiography. It is important to recognise that iatrogenic mitral stenosis due to TAVR may progress over time. Care should be taken to minimise the risk of this rare complication

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1. Case

A morbidly obese 57 year old female (BMI 47.5) with severe aortic stenosis (peak gradient 86 mmHg, mean gradient 47 mmHg) and preserved left ventricular systolic function (Ejection fraction = 65%) was admitted in pulmonary edema. She was declined surgical aortic valve replacement based on her Euro and STS scores (25.43% mortality and 32.3% complication risk, respectively) and therefore proceeded to elective TAVR. During implantation of a 29 mm CoreValve® System

(Medtronic, Inc. of Minneapolis, Minnesota, USA) her previously normal mitral valve was compromised. An intra-operative Transoesophageal echocardiogram (TOE) demonstrated impingement of the anterior leaflet of the mitral valve and this resulted in moderate mitral stenosis (mean gradient of 6–7 mmHg) (Fig. 1A). It was not possible to reposition the device due to horizontal angulation of the aorta. At 12 month clinical follow-up, she was found to be in NYHA Class III congestive heart failure. TOE demonstrated severe mitral stenosis with a peak gradient of 19 mmHg and mean gradient of 12 mmHg, likely due to progressive micro-calcification and

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<http://dx.doi.org/10.1016/j.ihj.2015.02.005>

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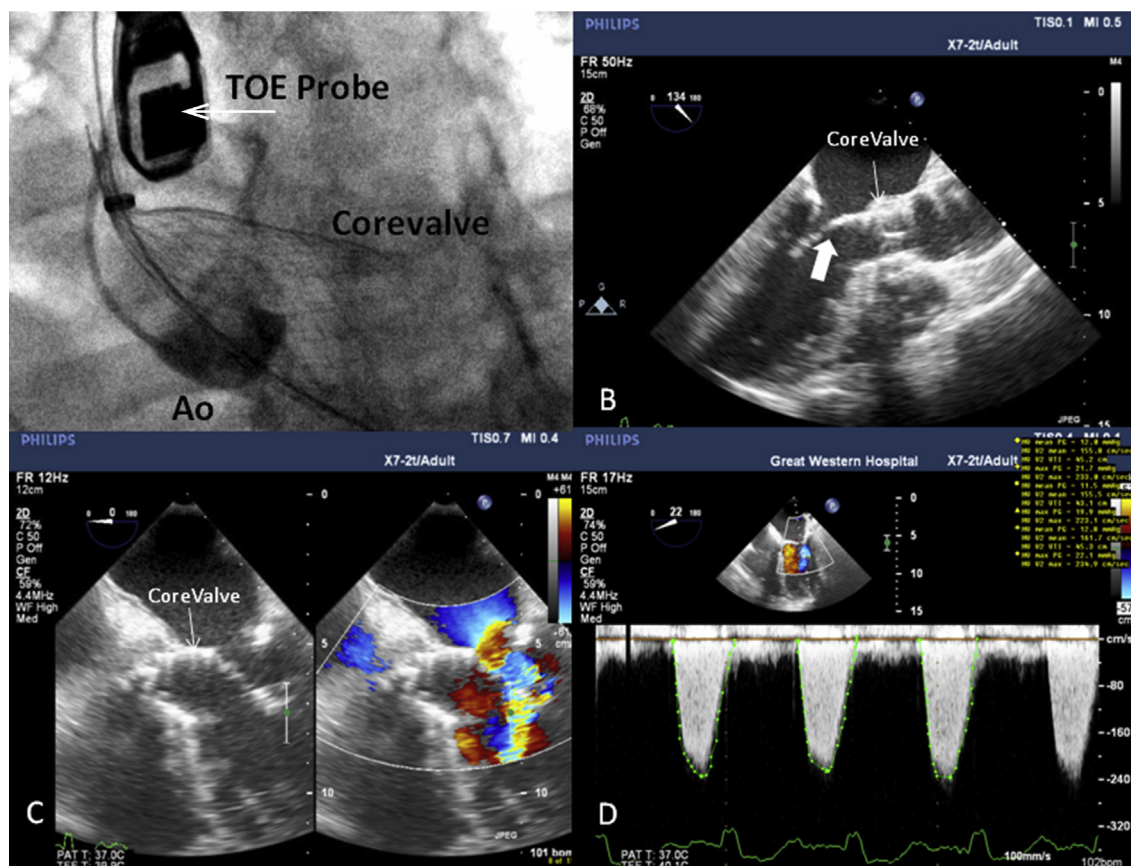


Fig. 1 – Panel A fluoroscopy left anterior oblique projection showing the aortic root (Ao) and the struts of the CoreValve below the annulus of the aortic valve. TOE probe (small arrow). Panel B transoesophageal (TOE) mid oesophageal long-axis view showing CoreValve in situ and struts impinging on the anterior mitral valve leaflet (AMVL) short arrow. Panel C (12 month follow-up) TOE modified mid oesophageal 4 chamber view showing CoreValve struts impinging on a AMVL (left) and color flow Doppler showing a high velocity jet through the restricted mitral valve in diastole (right). Panel D (12 month follow-up) continuous wave Doppler through mitral valve showing severe mitral stenosis (Peak gradient 19 mmHg and mean gradient 12 mmHg).

fibrosis of the restricted anterior mitral valve leaflet (Fig. 1A–D, Videos 1 and 2). The position of the TAVR was unchanged.

Supplementary video related to this article can be found at <http://dx.doi.org/10.1016/j.ihj.2015.02.005>.

In the literature there are only two reported cases of iatrogenic TAVR related mitral stenosis^{1,2} of which one proceeded to a SAVR (surgical aortic valve replacement). To avoid this rare but significant complication the size and positioning of the TAVR is crucial. With challenging aortic anatomies and poor radiographic imaging an alternative TAVR system or an apical approach should be considered. Peri-operatively, conservative management of iatrogenic moderate mitral stenosis may be appropriate but it is important to recognize that the degree of stenosis can progress over time.

Conflicts of interest

All authors have none to declare.

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