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IMAGES IN INTERVENTION

Successful Transcatheter Aortic Valve Replacement in a Patient With a Sinus of Valsalva Aneurysm

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Transcatheter aortic valve replacement (TAVR) is increasingly being used to treat patients with severe aortic stenosis who are either deemed to be inoperable or at prohibitive surgical risk (1). Both operator experience and devices have evolved over time, as have the indications for valve implantation.

We present the case of a 92-year-old woman with symptomatic aortic stenosis (area, 0.7 cm^2; peak/mean gradients, 45/24 mm Hg, respectively; ejection fraction, 55%), stable coronary artery disease, hypertension, and peripheral vascular disease who was deemed to be inoperable due to the presence of a porcelain aorta.

She was also known to have an aneurysm of the sinus of Valsalva limited to the right coronary cusp that was detected on transthoracic echocardiography (Fig. 1). This finding was confirmed by aortography (Fig. 2) and computed tomography (CT) (Fig. 3).

The presence of a sinus of Valsalva aneurysm, although not a contraindication to TAVR, could conceivably increase the risk of aortic rupture, a rare, but potentially devastating complication (2,3),

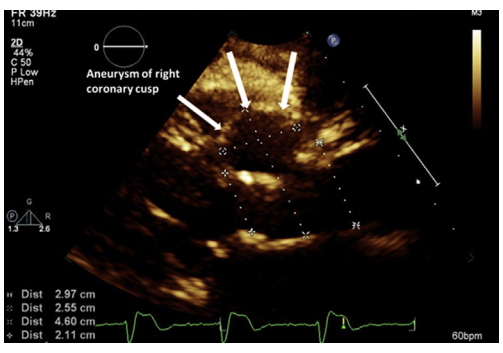

Figure 1. Transthoracic Echocardiogram Parasternal Long-Axis View

This view demonstrates that the sinus of Valsalva aneurysm limited to the right coronary cusp **(solid arrows)** and measures 4.6 cm in its maximal dimension.

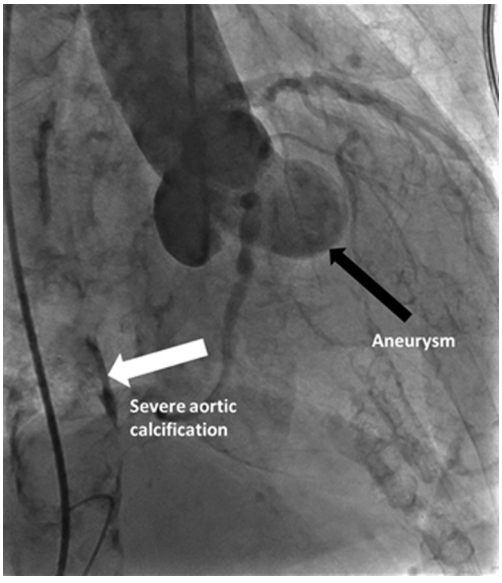

Figure 2. Aortogram Obtained in the Right Anterior Oblique Projection

Extensive aortic calcification (frequently referred to as porcelain aorta) is highlighted by the **white arrow**, and the saccular aneurysm of the sinus of Valsalva **(black arrow)** is seen to be limited to the right coronary cusp.

From the Victoria Heart Institute Foundation, Victoria, British Columbia, Canada. The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

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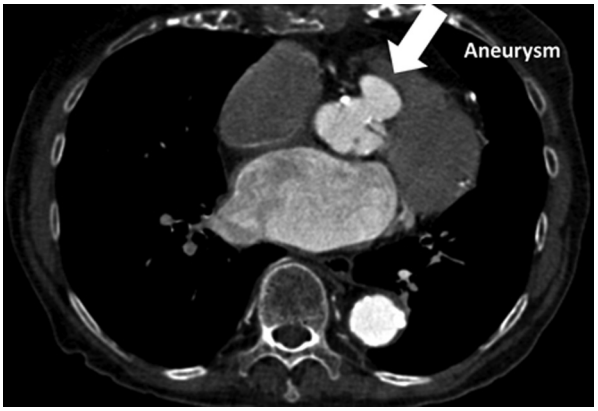

Figure 3. Short-Axis View Obtained by Computed Tomography

This view clearly shows the saccular aneurysm, which is limited to the right coronary cusp of the sinus of Valsalva **(arrow)**. Calcification of the aortic valve cusps is also noted.

during pre-dilation or valve deployment. We elected therefore to implant a self-expandable Medtronic CoreValve to minimize this risk (because it does not require balloon inflation to deploy the valve), while performing only modest pre-dilation with an 18-mm NuCLEUS balloon (NuMed Canada, Inc., Cornwall, Ontario, Canada). A 26-mm Medtronic CoreValve (Minneapolis, Minnesota) (based on CT dimensions) was then deployed safely under rapid pacing, and the subsequent aortogram (Fig. 4) showed the valve to be well deployed, with reduced filling of the aneurysm. This was later confirmed by CT scan (Fig. 5).

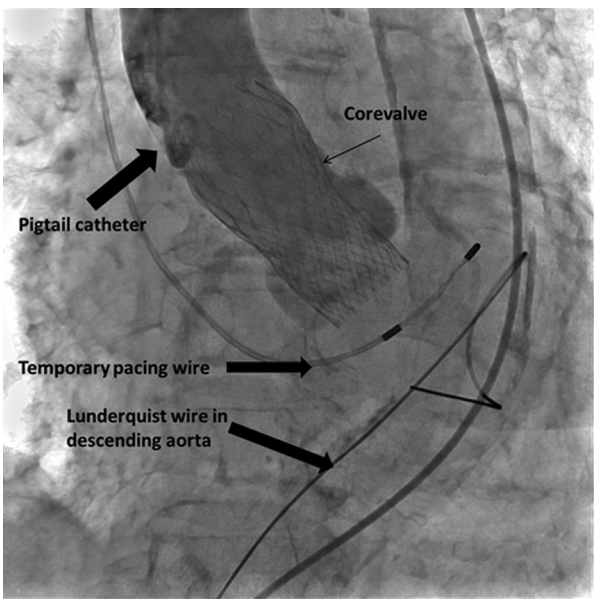

Figure 4. Aortogram Obtained During CoreValve Implantation

Aortogram showing improved appearance of aneurysm immediately after CoreValve (Medtronic, Minneapolis, Minnesota) deployment (shallow left anterior oblique-caudal view).

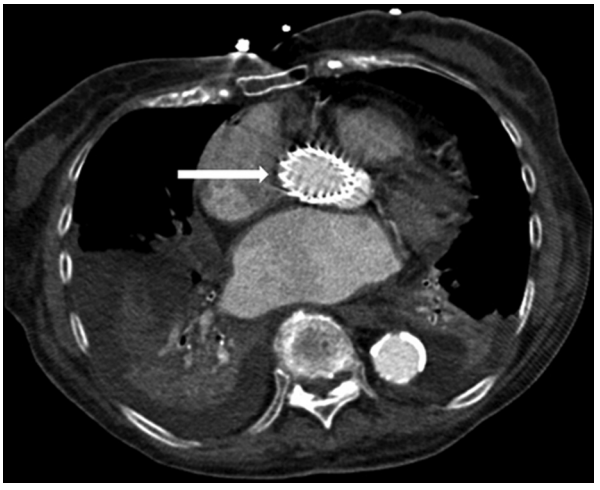

Figure 5. Computed Tomography of the Thorax With Contrast After Transcutaneous Aortic Valve Implantation

The 26-mm CoreValve (Medtronic, Minneapolis, Minnesota) is seen in place **(white arrow)**, and there is seen to be reduced filling of the aneurysm. The valve is seen to be well apposed to the aortic wall.

This case demonstrates that inoperable patients with aortic stenosis and a concomitant sinus of Valsalva aneurysm may be treated safely in selected situations by TAVR with a self-expandable transcatheter valve.

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Key Words: intervention ■ structural ■ transcatheter aortic valve replacement (TAVR) ■ valvular.