An Unusual Complication After Rupture of the SAPIEN 3 Valve Balloon During Transcatheter Aortic Valve Replacement

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A 56-year-old man with a history of chest radiation and severe aortic stenosis was transferred to our institution for percutaneous aortic valve replacement. The multislice computed tomography scan showed an aortic annulus measuring 482 cm² with an area-derived diameter of 24.8 mm and prominent calcifications at the sinotubular junction (Figure 1).

An Edwards SAPIEN 3 (S3) 26-mm valve (Edwards Lifesciences, Irvine, California) was accordingly implanted via a left femoral approach. However, at the end of the valve implantation, the valve balloon ruptured (Figure 2, Online Video 1). An aortic root...
angiogram showed adequate valve deployment with mild paravalvular regurgitation near the left coronary cusp that was trivial by transthoracic echocardiography. An attempt to remove the commander delivery system (Edwards Lifesciences) through the 14-F expandable sheath (eSheath, Edwards Lifesciences) was unsuccessful and met a lot of resistance, which led to splitting of the sheath (Figure 3). It was then decided to remove the sheath and the valve balloon as 1 unit. However, the nose cone of the commander delivery catheter was stuck at the common femoral level and was unable to be retrieved (Figures 4 and 5). Given the bleeding from the common femoral access, a crossover 9 x 40-mm Passeo balloon (Biotronik, Berlin, Germany) was inflated to ensure adequate hemostasis (Figure 6). At this point, the vascular team was consulted and performed a surgical cut down with successful retrieval of the Edwards delivery system, which
showed severe dismantling and tearing of the valve balloon (Figures 7A and 7B). The final angiogram showed successful common femoral artery closure with no complications (Figure 8, Online Video 2).

We assumed that the balloon ruptured when it came in contact with the calcification spicules on the sinotubular junction. Caution should be taken when using a balloon-expandable device in a calcified aorta to avoid catastrophic complications from ruptured balloons.

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**APPENDIX** For supplemental videos, please see the online version of this article.