

IMAGES AND VIDEOS

Transapical aortic valve replacement complicated by periaortic hematoma

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Summary

A 77-year-old woman with severe symptomatic aortic stenosis (aortic valve area=0.6 cm² and mean gradient=53 mmHg) was deemed inoperable for surgical aortic valve replacement due to a porcelain aorta, and was scheduled

for transcatheter aortic valve replacement via an apical approach. A 23 mm valve was selected based on a computerized axial tomographic angiography derived area of 360 mm²; valve oversizing was 15.4%. Baseline

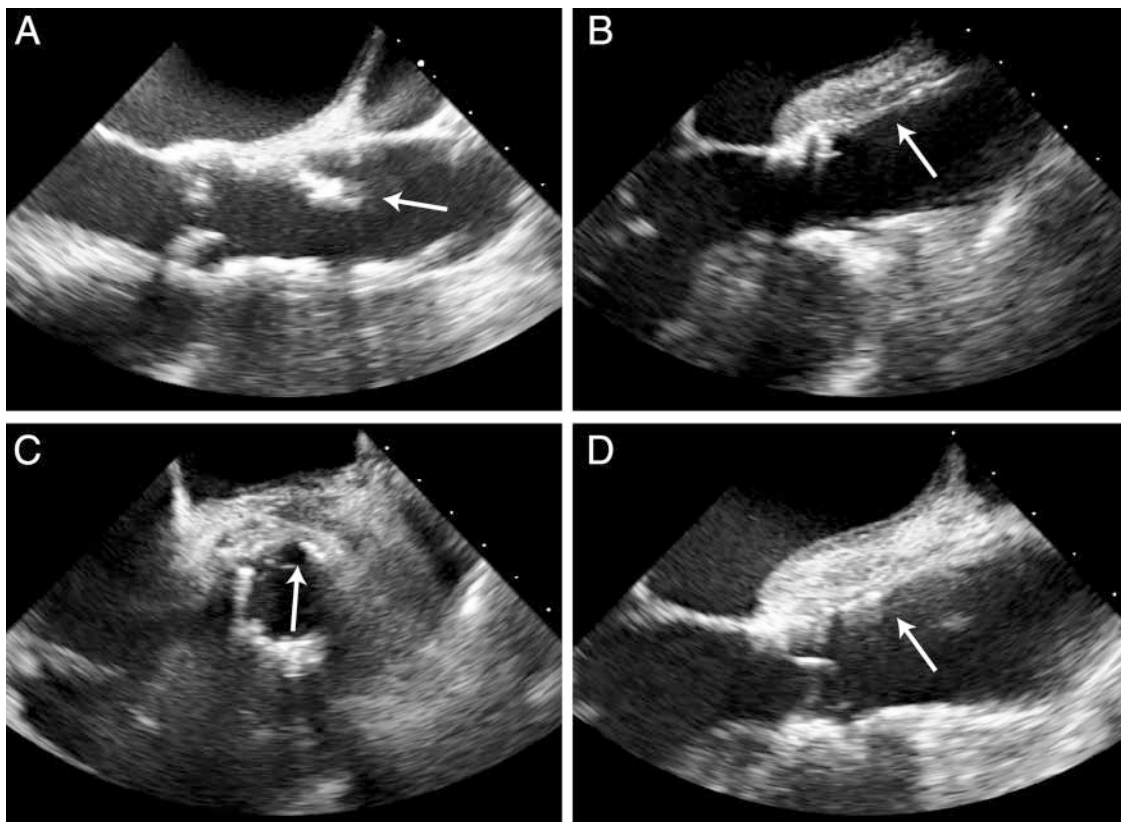


Figure 1

(A) Baseline transesophageal echocardiographic long-axis view of the aortic valve and ascending aorta. Note severe atherosclerotic plaque in the ascending aorta with protruding elements (arrow). (B) Similar view as 1A immediately following valve deployment. A larger posterior periaortic

hematoma is now present (arrow). (C) Short-axis view of the proximal aorta demonstrating the extensive posterior periaortic hematoma (arrow). (D) Long-axis zoom view of the ascending aorta and periaortic hematoma (arrow).

Video 1

Baseline transesophageal echocardiography long-axis view of the aortic valve and ascending aorta. Note the severe atherosclerotic plaque in the ascending aorta with protruding elements. Download Video 1 via <http://dx.doi.org/10.1530/ERP-15-0016-v1>.

Video 2

Similar view as Video 1, immediately following valve deployment. A large posterior periaortic hematoma is now present. Download Video 2 via <http://dx.doi.org/10.1530/ERP-15-0016-v2>.

Video 3

Short-axis view of the proximal aorta demonstrating the extensive posterior periaortic hematoma. Download Video 3 via <http://dx.doi.org/10.1530/ERP-15-0016-v3>.

Video 4

Long-axis zoom view of the ascending aorta and periaortic hematoma. Download Video 4 via <http://dx.doi.org/10.1530/ERP-15-0016-v4>.

transesophageal echocardiography revealed severe protruding atheroma within the lumen of the ascending aorta. Immediately following deployment of the Sapien pericardial tissue valve (Edwards Life Sciences, Irvine, CA, USA), a large posterior periaortic hematoma was noted (1.3 cm in maximum width, and ~4 cm in length) (see Fig. 1 and Videos 1, 2, 3, 4). Protamine was administered, and the hematoma was observed by transesophageal echocardiography for ~30 min with no change in size; function of the bioprosthetic valve was normal without regurgitation. In the immediate post-operative period, anti-platelet agents were withheld, and blood pressure was aggressively lowered. The remainder of her hospital course was uncomplicated, and a transthoracic echocardiogram

~1 month later demonstrated resolution of the hematoma. Periaortic hematoma and aortic root rupture are recognized potential major complications of transcatheter aortic valve replacement (1, 2). Severe left ventricular outflow tract calcification and annular over sizing are both risk factors for these complications. Careful transesophageal echocardiographic examination post valve deployment may lead to early recognition and treatment of this potentially fatal complication (3). In this case, presence of severe protruding atherosclerotic plaque pre-procedure likely predisposed to this complication.

Patient consent

The patient gave written informed consent for the publication of this report and accompanying images and videos.

Author contribution statement

D I Naji drafted the manuscript. A Chhatriwalla was a named physician of the patient and reviewed the manuscript for content. D J Cohen was a named physician of the patient and reviewed the manuscript for content. M L Main revised the manuscript and served as senior author.

References

- Généreux P, Reiss GR, Kodali SK, Williams MR & Hahn RT 2012 Periaortic hematoma after transcatheter aortic valve replacement: description of a new complication. *Catheterization and Cardiovascular Interventions* **79** 766–776. (doi:10.1002/ccd.23242)
- Barbanti M, Yang TH, Rodès Cabau J, Tamburino C, Wood DA, Jilaihawi H, Blanke P, Makkar RR, Latib A, Colombo A *et al.* 2013 Anatomical and procedural features associated with aortic root rupture during balloon-expandable transcatheter aortic valve replacement. *Circulation* **128** 244–253. (doi:10.1161/CIRCULATIONAHA.113.002947)
- Zamorano JL, Badano LP, Bruce C, Chan KL, Gonçalves A, Hahn RT, Keane MG, La Canna G, Monaghan MJ, Nihoyannopoulos P *et al.* 2011 EAE/ASE Recommendations for the use of echocardiography in new transcatheter interventions for valvular heart disease. *Journal of the American Society of Echocardiography* **24** 937–965. (doi:10.1016/j.echo.2011.07.003)

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