

Percutaneous management of progressive aortic root pseudoaneurysm

 Tea Domjanović Škopinić^{1,*},
 Andrija Matetić¹,
 Frane Runjić¹,
 Antonia Melada¹,
 Ivona Mustapić¹,
 Tina Bečić¹,
 Darija Baković Kramarić^{1,2}

¹University Hospital of Split, Split, Croatia

²University of Split, School of Medicine, Split, Croatia

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***ADDRESS FOR CORRESPONDENCE:** Tea Domjanović Škopinić, Klinički bolnički centar Split, Šoltanska 1, HR-21000 Split, Croatia. / Phone: +385-98-9757-677 / E-mail: tea.domjanovic@gmail.com

ORCID: Tea Domjanović Škopinić, <https://orcid.org/0000-0002-4989-6974> • Andrija Matetić, <https://orcid.org/0000-0001-9272-6906> • Frane Runjić, <https://orcid.org/0000-0001-6639-5971> • Antonia Melada, <https://orcid.org/0000-0003-4223-2582> • Ivona Mustapić, <https://orcid.org/0000-0002-1534-3642> • Tina Bečić, <https://orcid.org/0000-0001-7596-2712> • Darija Baković Kramarić, <https://orcid.org/0000-0001-6751-5242>

Introduction: Aortic pseudoaneurysm is a rare and potentially life-threatening complication that can arise after aortic root surgery¹. Surgical management is the treatment of choice, but substantial proportion of patients have high surgical risk and mortality, particularly in case of reoperations², warranting other therapeutic options.

Case report: We present a 65-year-old woman with a history of aortic dissection (Stanford A; TEM: A-E1-M3) that underwent cardiac surgery with aortic valve resuspension, ascending aorta reconstruction (straight graft), and coronary artery bypass grafting (vein to the right coronary artery) 4 years ago. During the follow-up, she was diagnosed with aortic root pseudoaneurysm, with parietal thrombus and 3 active communications with the sinuses of Valsalva (2 joint apertures in the RCC region and 1 smaller tubular aperture in the NCC region). Other findings revealed an occluded vein graft, and chronic stable dissection of abdominal aorta extending into the right iliac artery. Initial plan included strict clinical follow-up with sequential imaging ('watchful waiting'), but due to high-risk features (1-year progression; root location; large volume of ~31 mL) there was an indication for active management. Given the high risk of surgical reoperation (EuroScore II = 15.3%), the multidisciplinary Heart team decided for the percutaneous closure. We have conducted individualized planning with detailed multimodality imaging and advanced 3-dimensional reconstructions (**Figure 1**). The procedure was successfully performed by deploying an atrial septal occluder (18 mm) in the RCC apertures (**Figure 2A**), and additional vascular coils within the pseudoaneurysm (**Figure 2B**). There was no interaction with aortic valve nor coronary ostia, as planned. Follow-up imaging confirmed a successful and stable exclusion of pseudoaneurysm from aortic circulation (**Figure 3**), with only a minor residual flow through the occluder (temporary mesh porosity until complete device endothelialization). The patient was closely monitored for any complications, and no further issues were observed during the 1-year follow-up.

Conclusion: This case highlights the potential of innovative percutaneous transcatheter options in managing surgical complications, such as aortic root pseudoaneurysms, in selected high-risk patients. These cases require multidisciplinary assessment, advanced multimodality planning and accurate performance in experienced centers.

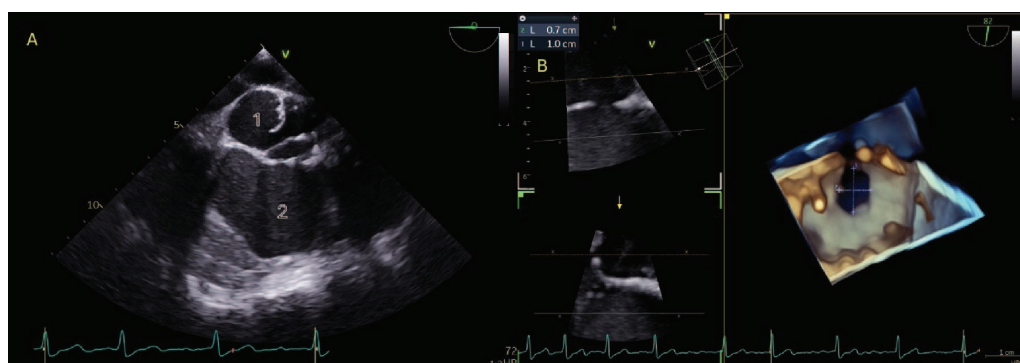


FIGURE 1. A) Transesophageal echocardiography image of aortic pseudoaneurysm (1 – aortic root; 2 – pseudoaneurysm). B) One of the communications of the pseudoaneurysm with the sinus of Valsalva, measuring 7x10 mm.

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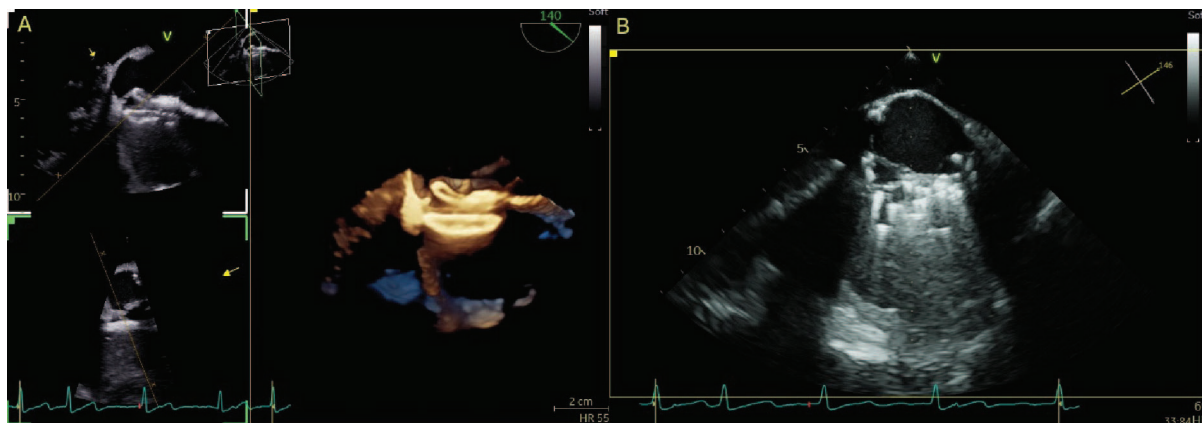


FIGURE 2. Transesophageal echocardiography after the intervention showing the implanted occluder in the RCC aperture (A) and vascular coils that immediately obstructed the flow within the pseudoaneurysm (B).

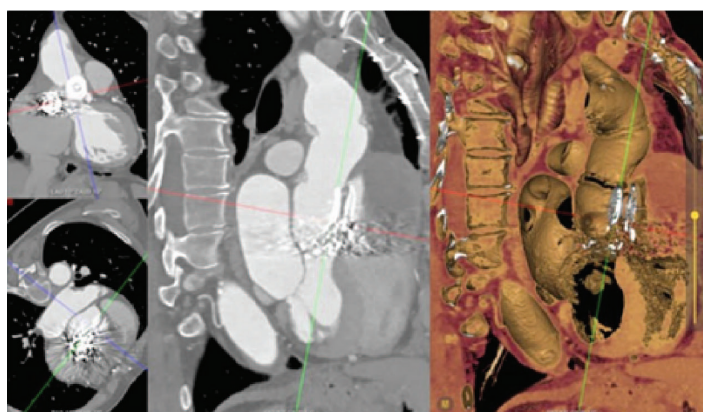
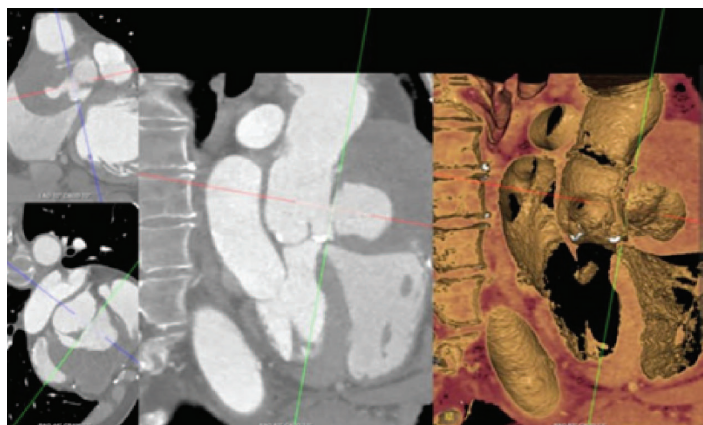


FIGURE 3. CT reconstruction of the aortic root pseudoaneurysm before (upper image) and 6 months after the intervention (bottom image)

LITERATURE

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