

# Bulge of left atrial roof imaged by three-dimensional transoesophageal echocardiography: a novel feature of periannular abscess formation in aortic prosthesis endocarditis?

Uwypuklenie sklepienia lewego przedsionka w trójwymiarowej echokardiografii przezprzełykowej: nowy objaw tworzącego się ropnia okołopierścieniowego w infekcyjnym zapaleniu wsierdza na protezie zastawki aortalnej?

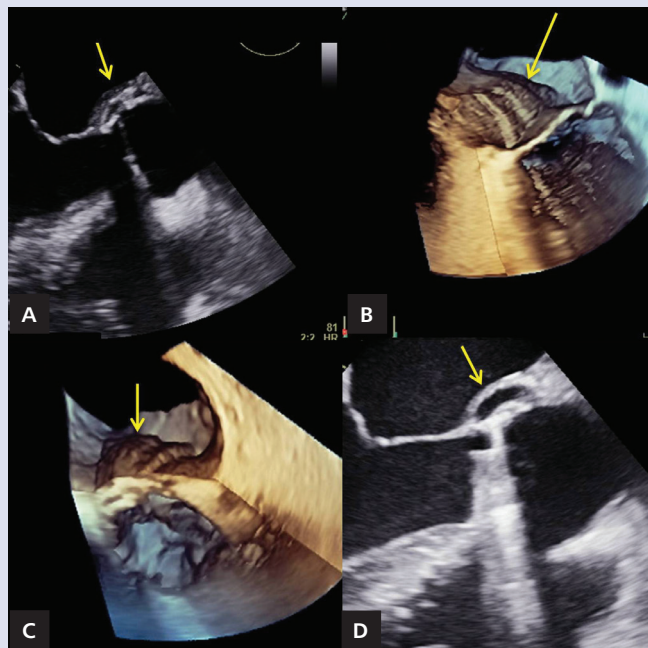
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A 54-year-old male with a history of aortic valve mechanical prosthesis implantation 4 months prior to admission, due to severe aortic regurgitation caused by infective endocarditis (IE), was referred to the Cardiology Department with fever, progressive fatigue, and diarrhoea. Initial sets of blood cultures revealed beta-haemolytic group G *Streptococcus*. Intravenous vancomycin and gentamicin in reduced doses due to kidney insufficiency were implemented. On two- and three-dimensional transoesophageal echocardiography (3D TEE) no additional structures suggesting vegetation of the aortic prosthetic valve were observed. The aortic wall in the vicinity of the left atrium was thickened up to 15 mm with a narrow echo-lucent space. Interestingly, in 3D TEE a pronounced bulge of the left atrium wall with an irregular surface seen from the left atrial perspective was noted (Fig. 1A–C). The aortic prosthesis function was normal with no paravalvular leakage. Based on the echocardiographic images, periannular abscess formation was suspected. Due to deteriorating kidney function, after 3 weeks of treatment, the patient was given ampicillin instead of vancomycin and gentamycin. Control 3D TEE showed typical periprosthetic aortic valve empty abscess cavity with two paravalvular leaks localised on the two sides of the prosthesis, forming a pseudoaneurysm that led to instability of the aortic annulus (Fig. 1D). The patient was transferred to cardiac surgery and underwent urgent replacement of the aortic prosthesis. The postoperative course was not complicated and the patient was discharged home on the 10<sup>th</sup> day after the surgery.

Prosthetic valve IE occurs in 2–4% of patients with valve prosthesis. There are three major echocardiographic findings in the diagnosis of IE: vegetation, abscess, and new dehiscence of a prosthetic valve. Diagnosis may be particularly challenging in IE affecting mechanical prosthetic valves, even with the use of TEE. 3D TEE utility has been confirmed in aortic prosthesis sizing, but there have been very few observations concerning prosthetic valve endocarditis assessment when using this tool. Our finding suggests that 3D TEE may be helpful in distinguishing abscess formation from post cardiac surgery aortic wall thickening or haematoma by imaging the bulge of the atrial wall due to the inflammatory process and abscess formation in the aortic wall. We believe that an infective process can bulge irregularly the left atrial roof, contrary to haematoma or post cardiac surgery aortic wall thickening which can be easily imaged in 3D TEE. Besides the previously described typical echo findings of IE, an additional sign of the left atrial roof infiltration with bulge found in our first 3D TEE examination could be another feature of early infection process. Active research for this phenomenon may be helpful in establishing the diagnosis of early perivalvular abscess.



**Figure 1.** A. Transoesophageal echocardiography (TEE), mid-oesophageal aortic valve long-axis view showing bulge of the left atrial roof (arrow); B. Three-dimensional TEE (3D TEE), mid-oesophageal aortic valve short-axis view showing bulge of left atrial roof (arrow); C. 3D TEE, mid-oesophageal aortic valve long-axis view showing bulge of the left atrial roof (arrow); D. Control TEE, mid-oesophageal aortic valve long-axis view showing periprosthetic aortic valve empty abscess cavity constituting a pseudoaneurysm (arrow)

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**Conflict of interest:** none declared

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