

A 3D transesophageal echocardiography-facilitated diagnosis and cryoballoon ablation of paroxysmal atrial fibrillation in a patient with cor triatriatum sinister

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A 58-year-old male patient with a history of highly symptomatic paroxysmal atrial fibrillation (AF) and documented concomitant atrial flutter (AFL), hypertension, and obesity was scheduled for cryoballoon ablation (CB). Six months earlier he had undergone a cavotricuspid isthmus ablation (CTI) in a different center. At that time, he was originally scheduled for AF ablation, but the operator was discouraged from transeptal puncture due to a linear structure of an unknown origin diagnosed in the left atrium during pre-procedural 2D transesophageal echocardiography (TEE).

Transthoracic echocardiography (TTE) performed in our center showed normal left ventricular ejection fraction (LVEF, 60%), mildly dilated left atrium (LA area, 22 cm²), functionally bicuspid aortic valve with moderate stenosis (aortic valve area 1.1–1.2 cm², gradient 36/16 mm Hg), and mild regurgitation. On the day of the procedure, the patient had sinus rhythm. A 3D TEE (Philips Epiq 7, Bothell, WA, US) performed in the cath lab showed a benign form of cor triatriatum sinister. A membrane located between the interatrial septum and the ridge between the left atrial appendage and left superior pulmonary vein with a significant opening in the middle was found, partially dividing the cavity of the LA into a posterosuperior part containing the ostia of the pulmonary veins and an anteroinferior part that provided the actual mitral inflow (Figure 1A and B, Supplementary materials, Video S1 and S2). A TEE-guided transeptal puncture

was performed aiming at the pulmonary vein compartment of the LA (Figure 1C–F, Supplementary material, Video S3), and CB of AF was safely performed (Supplementary materials, Table S1, Figure S1). The patient was discharged the next day without complications.

Cor triatriatum is an extremely rare heart defect comprising less than 0.4% of all congenital heart diseases [1]. The symptoms depend on the connection between both LA compartments. Usually, mitral inflow is severely obstructed, and patients require surgery as infants. However, sometimes there is a wide opening in the membrane, and patients remain asymptomatic for many years and may get diagnosed accidentally as in our case. According to Karimianopur et al. [2] such a phenomenon takes place in one in thousand AF ablations.

CB is a well-recognized and widely utilized procedure for AF ablation in Poland [3]. It has been demonstrated that this single-shot ablation was feasible and safe to perform in patients with anatomical variabilities of the LA [4]. The important role of 3D TEE in interventional cardiology has also been previously reported [5].

We would like to emphasize that in this case, 3D/2D TEE allowed for proper diagnosis and safe pulmonary vein isolation using a cryoballoon in a patient with a benign form of triatrial heart without the need for other preprocedural cardiac imaging including contrast-enhanced computed tomography.

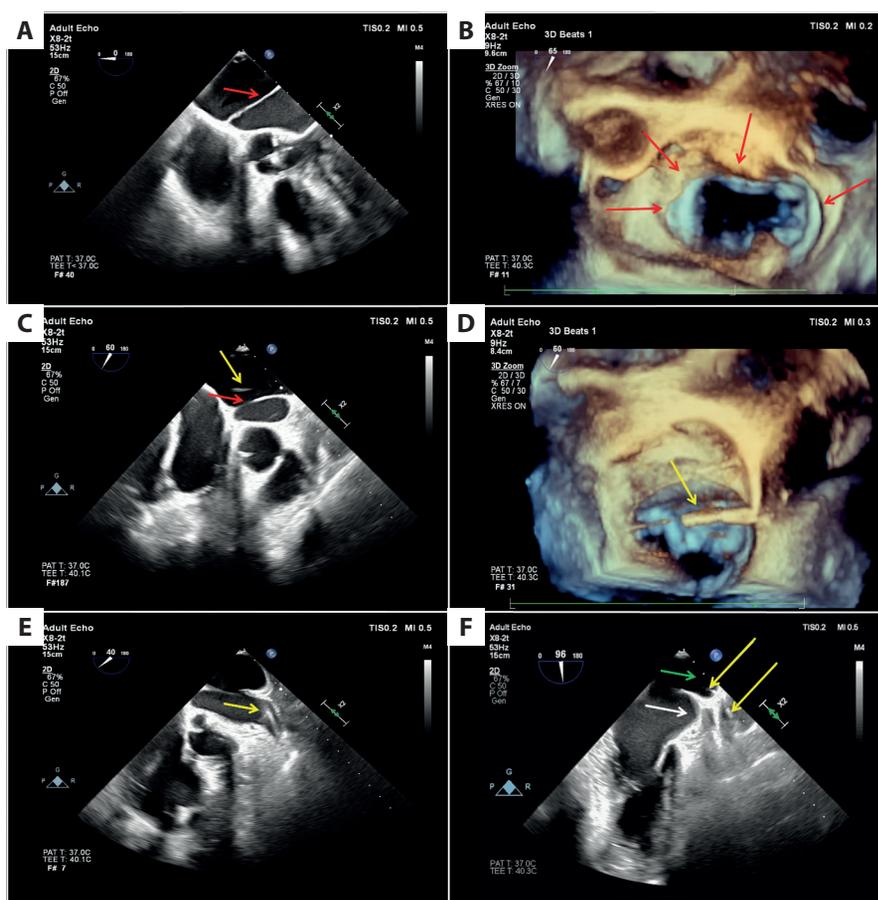


Figure 1. 2D/3D transesophageal echocardiography (TEE) images of the membrane in the left atrium and transseptal puncture. **A.** A 2D TEE mid-esophageal (ME) five-chamber view of the left atrium membrane (red arrow). **B.** A 3D TEE image of the left atrium membrane (red arrows) with mitral valve leaflets in the background. **C.** A 2D TEE ME aortic valve short-axis view of the guide wire (yellow arrow) in the posterior compartment of the left atrium, behind the membrane (red arrow). **D.** 3D TEE image of the transseptal sheath and guide wire (foreground, yellow arrow) over the left atrial membrane and mitral valve (background). **E.** A 2D TEE ME two-chamber view of the guide wire (yellow arrow) in the anterior compartment of the left atrium heading towards the left atrial appendage. **F.** A 2D TEE ME two-chamber view of the guide wire (yellow arrows) in the posterior compartment of the left atrium (green arrow) heading towards the left superior pulmonary vein. The white arrow indicates the anterior compartment of the left atrium with the appendage

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/kardiologia_polska.

Article information

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