



## Transesophageal imaging of cor triatriatum sinistrum

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A 55-yr-old asymptomatic patient (who consented to this report) presented for cardiac surgical treatment of a stenotic bicuspid aortic valve and dilated ascending aorta that had been identified by transthoracic echocardiography (TTE) and computed tomography (CT) imaging. Intraoperative transesophageal echocardiography (TEE) revealed an additional anomaly in the left atrium not previously reported. A TEE mid-esophageal five-chamber view (panel A) with additional views at 72° (panel B) showed a clear relation of the anomaly to the left atrial appendage and pulmonary veins. A membrane extending from the coumadin ridge to the intra-atrial septum separated the left atrium into two chambers finalizing the diagnosis of cor triatriatum sinistrum. After discussion with the cardiac surgeon, the decision was made to excise the membrane, as it could potentially lead to (further) stenosis of the membrane or increased thrombosis/stroke risk if left untreated. Partial resection of the left atrial membrane showed multiple fenestrations (panel C). The TEE

examination at the end of surgery showed some remnants of the membrane (panel D).

On retrospective review of the TTE images obtained at a referral hospital, there were no indications of a cor triatriatum sinistrum. Careful review of the CT also did not show the cor triatriatum. Meticulous scanning with TTE or a gated CT with contrast might have shown the membrane.

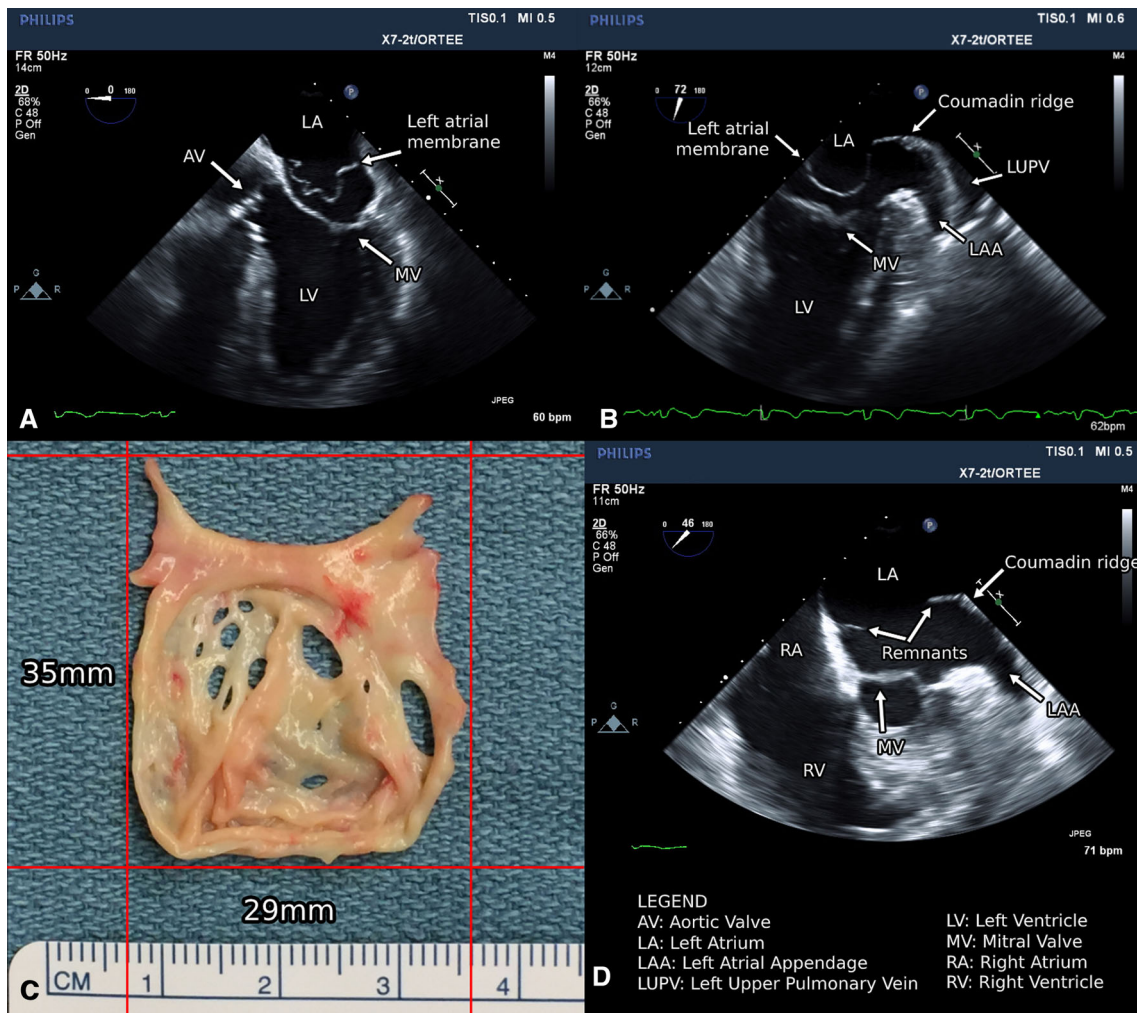
Being the rarest congenital heart disease with a prevalence of around 20 per one million live births,<sup>1</sup> cor triatriatum commonly coexists with atrial septal defects (ASD) and/or abnormal pulmonary vein return.<sup>2</sup> In 1949, Loeffler described the grading of the different morphologies of cor triatriatum sinistrum.<sup>3</sup> In our case, as no ASD and or gradient across the membrane was present (TEE loops available as Electronic Supplementary Material), the Loeffler grading would represent a type 3 cor triatriatum sinistrum. The patient's recovery after his surgery was unremarkable.

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**Figure** A) Transesophageal echocardiographic (TEE) mid-esophageal five-chamber view in a 55-yr-old patient with a left atrial membrane consistent with cor triatriatum sinistrum. B) An additional view at 72° (panel B) shows the relationship of the membrane to the left atrial appendage and pulmonary veins. C) The

resected left atrial membrane showed multiple fenestrations. D) The TEE examination at the end of surgery showed membrane remnants. AV = aortic valve; LA = left atrium; LAA = left atrial appendage; LUPV = left upper pulmonary vein; LV = left ventricle; MV = mitral valve; RA = right atrium; RV = right ventricle

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**References**

1. Liu Y, Chen S, Zühlke L, et al. Global birth prevalence of congenital heart defects 1970-2017: updated systematic review and meta-analysis of 260 studies. *Int J Epidemiol* 2019; 48: 455-63.
2. Humpl T, Reineker K, Manlhiot C, Dipchand AI, Coles JG, McCrindle BW. Cor triatriatum sinistrum in childhood. A single institution’s experience. *Can J Cardiol* 2010; 26: 371-6.
3. Nassar PN, Hamdan RH. Cor triatriatum sinistrum: classification and imaging modalities. *Eur J Cardiovasc Med* 2011; 1: 84-7.

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