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CARDIOVASCULAR FLASHLIGHT
Adult congenital heart disease

Small cardiac vein connecting the coronary sinus with the right atrium

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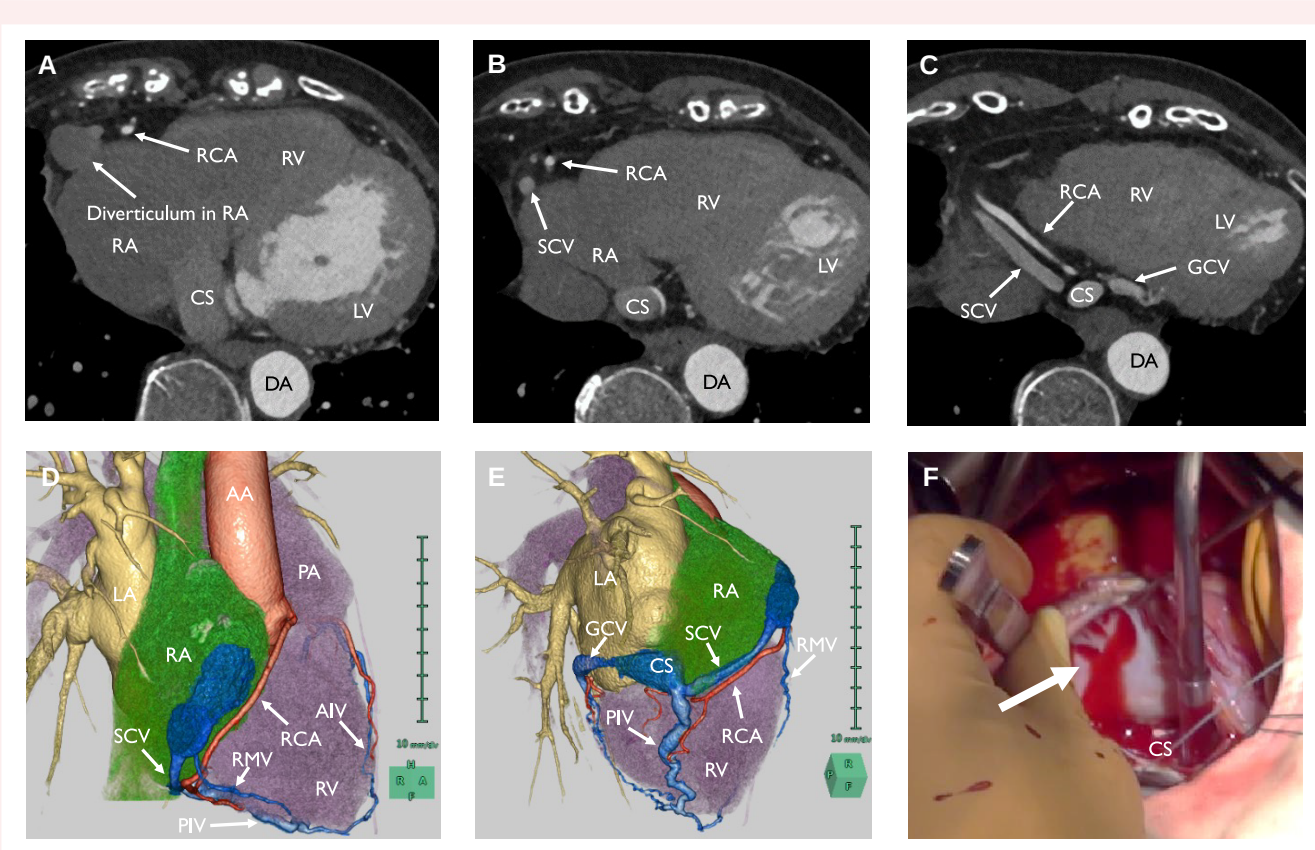

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A 63-year-old woman complained of dyspnoea on exertion and was diagnosed with severe mitral valve regurgitation due to the prolapse of the posterior mitral valve leaflet on echocardiography. The patient was referred to our hospital for a mitral valve plasty (MVP). Cardiac computed tomography revealed a diverticulum in the right atrium (RA), a dilated coronary sinus (CS), great cardiac vein, and posterior interventricular vein (PIV; *Panels A–C*). A small cardiac vein (SCV) connected the CS to the right atrial diverticulum (see Supplementary material online, *Video S1*). Volume-rendering images showed that the SCV was connected with the PIV and directly opened into the RA with aneurysm formation (*Panels D* and *E*; see Supplementary material online, *Video S2*). After acquiring information about the cardiac vein malformation, MVP was performed under cardiopulmonary bypass using antegrade cardioplegia. Upon antegrade cardioplegia delivery, blood backflow was observed in both the CS and the right atrial diverticulum (*Panel F*, arrow pointing to the right atrial diverticulum; see Supplementary material online, *Video S3*). The SCV typically runs along the back surface of the atrioventricular groove and drains into the CS. Infrequently, SCV draining into the PIV or directly into the RA was observed in 12 and 2% of 50 post-mortem human hearts, respectively. Surgical repair of the SCV anomaly was not performed because the SCV anomaly had minimal effect on the haemodynamic system in the present case. However, retrograde cardioplegia may result in incomplete myocardial protection during cardiac surgery. The presence of an SCV connected to the RA may provide an anatomical substrate for generating abnormal atrioventricular connections and inducing supraventricular arrhythmias. In addition, knowledge of the coronary venous anatomy and anomalies is required for procedures such as left ventricular pacing and arrhythmia ablation.

Supplementary material

Supplementary material is available at *European Heart Journal – Case Reports* online.

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Data availability

No new data were generated or analysed in support of this article.