An unusual connection of inferior pulmonary veins in the left atrium via a common ostium: a cardiac computed tomographic angiography discovery before cryoballoon pulmonary vein isolation in atrial fibrillation

A 72-year-old man was referred for cryoballoon pulmonary vein (PV) isolation. He had a history of paroxysmal symptomatic atrial fibrillation refractory to oral d,l sotalol 320 mg/day.

A cardiac computed tomographic angiography (CTA) to evaluate left atrium and PV anatomy was performed prior to the ablation procedure. The CTA revealed an unusual pulmonary venous anomaly consisting of a common ostium of the left and right inferior PV. These two inferior PVs are connected to the left atrium by a large and common ostium (figure 1).

Using a trans-septal approach, these PVs have been successfully isolated by cryoballoon application using a 23 mm Arctic front double-lumen cryoballoon catheter (arctic front, Medtronic, USA) without adverse events.

The two most common PV anomalies are the presence of a right middle PV and common left trunk. Common pulmonary venous ostium of the right and left inferior pulmonary veins has been rarely described previously in the context of PV isolation.1

This case demonstrates a very rare variation in the pattern of pulmonary venous drainage. CTA of PVs and the left atrium is very useful for guiding the electrophysiologist2 during cryoballoon ablation. It is useful for the choice of the cryoballoon diameter and to guide the cryoballoon orientation for an optimal PVs occlusion.

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Figure 1 (A) Volume-rendered three-dimensional computed tomographic angiography image of the common ostium (CO) of the left inferior pulmonary vein (LIPV) and right inferior pulmonary veins (RIPV). (B) Intra-atrial view of the CO connecting inferior pulmonary veins (PVs) to the left atrium. (C) Computed tomographic image projection in the oblique axial view showing the PVs entering the left atrium via a common ostium. FAL—antero-lateral face, LSPV—left superior pulmonary vein, RIPV—right inferior pulmonary vein.

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