

Left Atrial Appendage Perforation Does Not Always Mean Pericardial Effusion



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An 81-year-old man was referred for left atrial appendage (LAA) closure because of nonvalvular atrial fibrillation and recurrent gastrointestinal bleeds with 2 direct oral anticoagulants. He had a CHA₂DS₂-VASc score of 4 and a HAS-BLED score of 3. A 25-mm Amplatzer Amulet device (St. Jude Medical, Saint Paul, Minnesota) was used.

Figure 1A shows a right caudal view of the selective LAA injection. In Figure 1B, the screw of the device crosses the wall of the LAA, before Figure 1C was taken. In Figure 1C, while injecting, before deploying the device, contrast has travelled from the LAA to branches of the left superior pulmonary vein (LSPVB). The device had to be implanted very quickly to occlude the passage of blood to the LAA. The procedure was performed using transesophageal echocardiography monitoring, which showed the absence of pericardial effusion at all times. After releasing the device, no passage of contrast to the LAA or to the LSPVB was noted.

Although cases of perforation with the guidewire (1) or with the device (2) have been reported in invasive

procedures, and even perforation of the pulmonary artery (3,4), to the best of our knowledge, this is the first time that a case like this has been described in which a fistula from the LAA to the LSPVB is created, preventing the passage of blood or contrast to the pericardial sac.

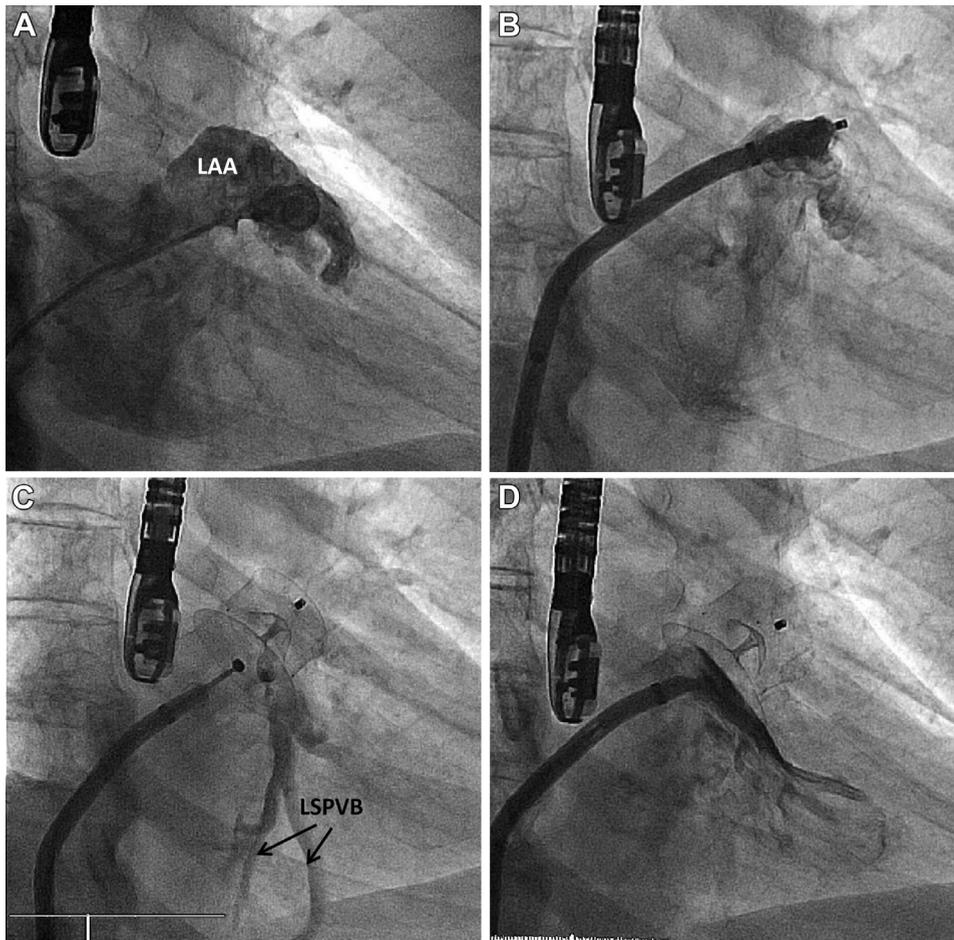
Figures 2A and 2B show the close relationship of the LAA with the LSPVB. Figure 2C shows a left lateral view of a heart, in which dissection of the left pulmonary and coronary veins has been performed. Note the division of some of the LSPVB in relation to the LAA, also observed in a cross-sectional computed tomography slice (Figure 2D). The fact that the LSPVB passed closely adjacent to the outer wall of the LAA meant that the blood or contrast drained directly into those branches. After LAA closure, the problem was resolved with no sequelae.

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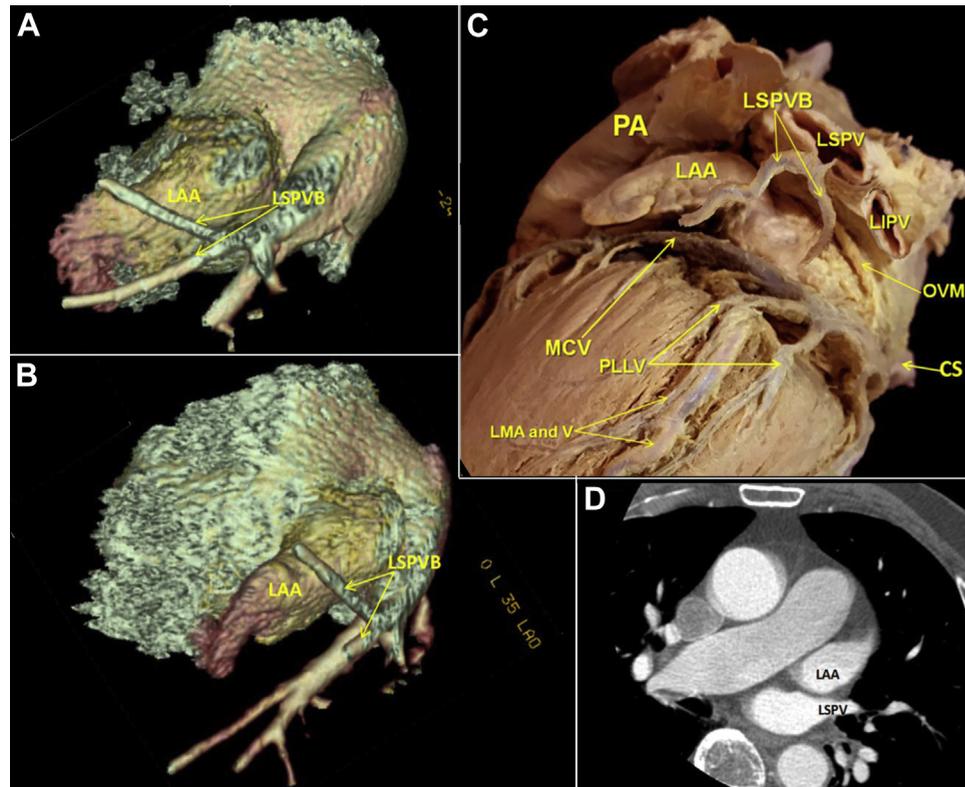
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FIGURE 1 Steps of the Procedure



(A) Selective injection of contrast into the left atrial appendage. **(B)** The external screw of the device is too deeply embedded. **(C)** Passage of contrast from the left atrial appendage (LAA) to a branch of the left superior pulmonary vein (LSPVB); the Amulet device was rapidly implanted. **(D)** After releasing the device, passage of contrast to the LSPVB was no longer observed.

FIGURE 2 Anatomic Relationship Between the LAA and Branches of the LSPVB

A and **B** show the close relationship of the LAA with the LSPVB. **(C)** Left lateral view of a heart in which a dissection of the left pulmonary veins and coronary veins has been performed. **(D)** This relationship is observed in a cross-sectional computed tomography slice. CS = coronary sinus; LIPV = left inferior pulmonary vein; LSPV = left superior pulmonary vein; LMA and V = left marginal artery and vein; MCV = major cardiac vein; OVM = oblique vein of Marshall; PA = pulmonary artery; PLLV = posterolateral veins of the left ventricle; other abbreviations as in [Figure 1](#).

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