Persistent left-sided superior vena cava (LSVC) is one of the most common asymptomatic congenital anomalies, and it is seen as a dilated coronary sinus as noted on transthoracic or perioperative transesophageal echocardiography (A and B). Diagnosis includes injection of saline contrast into the left arm with visualization of contrast bubbles in the coronary sinus before entering the right atrium (C and D, Online Video 1). The finding of an LSVC during cardiac surgery (E) is significant because the balloon on the tip of the retrograde cardioplegia catheter is frequently of insufficient size to adequately occlude the dilated lumen of the coronary sinus. This can lead to dislodgement of the catheter and can complicate the delivery of the retrograde cardioplegia. Real-time 3-dimensional transesophageal echocardiography offers a unique perspective not only in length and width, but also in depth when compared to 2-dimensional imaging (F to H, Online Videos 2 to 4). AV = aortic valve; CS = coronary sinus; LA = left atrium; LAA = left atrial appendage; LSVC = left superior vena cava; LV = left ventricle; MV = mitral valve; PA = pulmonary artery; PAC = pulmonary artery catheter; RA = right atrium; RSVC = right superior vena cava; RV = right ventricle; TV = tricuspid valve.