**Left to Right Atrial Appendage Fistula Discovered During Device Closure of an ASD**

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**Background:** Various forms of atrial fistulae have been described, however, to our knowledge, this is the first report of a left atrium to right atrial appendage fistula isolated from the atrial septum. This was discovered in the cardiac catheterization laboratory during routine device closure of a secundum atrial septal defect (ASD).

**Methods:** This is a case report on a five year old otherwise healthy male who presented for cardiac catheterization to close a secundum ASD. Angiograms and data obtained during catheterization, as well as echocardiograms were reviewed for this report.

**Results:** During cardiac catheterization, hemodynamic measurements demonstrated a Qp:Qs of 1.85:1 and a pulmonary flow index of 7.53 L/min/m². Intracardiac echocardiography (ICE) showed a small ASD measuring 3.5 mm, which was deemed inconsistent with the relatively large Qp:Qs ratio. The entire atrial septum was visualized with ICE and no further ASDs were identified. Angiography of the pulmonary arteries was performed and all four pulmonary veins appeared to enter the left atrium, eliminating the possibility of partial anomalous pulmonary venous return. A balloon wedge catheter was advanced across the secundum ASD and the balloon was inflated to occlude the ASD. An angiogram during occlusion showed a left-to-right shunt within the atria to the right of the aorta, which formed a communication between the left atrium and the right atrial appendage. After crossing the defect from right to left atrium, a 20 mm Amplatzer Vascular Plug II was used to occlude the fistula under fluoroscopic and echocardiographic guidance.

**Conclusions:** While a number of atrial fistulae have been described, to our knowledge, this is the first reported case of a left atrium to right atrial communication remote from the atrial septum. This case highlights the importance of detailed investigation when hemodynamic calculations do not align with what is seen on echocardiography.