

AMPLATZER® Septal Occluder Case Study

Closure of Large Secundum-Type ASD with the AMPLATZER Septal Occluder

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Patient History

A 67-year old female was diagnosed at the age of 57 to have an atrial septal defect. Primary symptoms were shortness of breath and easy fatigability. Her symptoms increased in severity and were considered to be in NYHA functional class III-IV due to severe right heart failure. She developed significant atrial dysrhythmias for which she was maintained on amiodarone, digoxin and Coumadin. She was referred for the possibility of catheter closure. She was also maintained on lasix and captopril for the heart failure.

Diagnostic Findings

A transesophageal echocardiogram (TEE) was performed and revealed the presence of a large, secundum type ASD measuring 23mm with large right atrium and ventricle (Figure 1).

Procedure Description

Under general endotracheal anesthesia and continuous TEE monitoring, routine right and left heart catheterization was performed. The pulmonary artery pressure was 38/16 (24) mm Hg with descending aortic pressure of 83/43 (56) mm Hg. The Qp/Qs ratio was 2.2:1 The balloon diameter of the defect was measured to be 27mm (Figure 2). An 8 Fr sheath (AGA Medical

Corp.) was passed over the guidewire into the left upper pulmonary vein. A 26mm AMPLATZER Septal Occluder was attached to the delivery cable, compressed into the loader and introduced into the sheath. An initial attempt at deploying the device resulted in pulling of the device across the thin septum into the right atrium. Therefore, the device was recaptured and a repeat attempt with modification of the deployment (part of the connecting waist was deployed in the left atrium) resulted in successful closure. Correct device position was verified by TEE and by pulling and pushing on the delivery cable to confirm secure anchoring of the device ("Minnesota Wiggle"). The device was released by counterclockwise rotation of the plastic vise. Repeat TEE evaluation revealed complete closure of the defect (Figure 3). An attempt at extubating the patient in the catheterization laboratory failed due to heart failure and pulmonary edema. Therefore, the patient was allowed to recover in the Cardiac Care Unit. She was discharged home one week later on her above medications. The fluoroscopic time was 30 minutes and total procedure time was 115 minutes. On follow-up, her symptoms improved significantly and she is now in NYHA functional class I-II. Repeat TEE after 4 months revealed complete closure with decrease in the right atrium and ventricle size (Figures 4 & 5).

Discussion

This case illustrates the major benefits of device closure in this high surgical risk patient. The risk of surgery would have been significantly increased due to her heart failure, pulmonary edema and atrial arrhythmia. Her defect size was big with a stop-flow diameter of 27mm. Conventionally, we would have liked the device size to be equal or 1mm larger than the stop-flow diameter of the defect. However, because of her condition, we decided to implant the largest device available at the time, a 26mm AMPLATZER Septal Occluder. The fact that the device is easily recapturable and repositionable after deployment of both discs increased our confidence in attempting the implantation which resulted in complete closure of the defect.

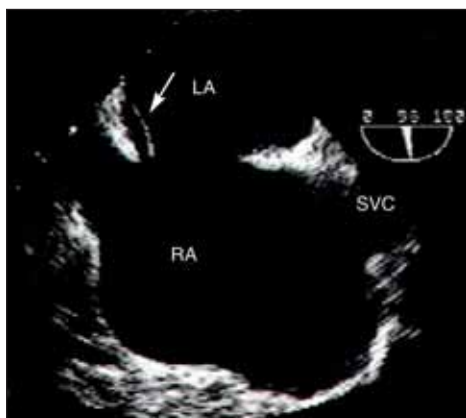


Figure 1: Longitudinal TEE view revealing a 23mm secundum type ASD with left-to-right shunt and RA enlargement prior to closure. Note the thin inferior septum (arrow).

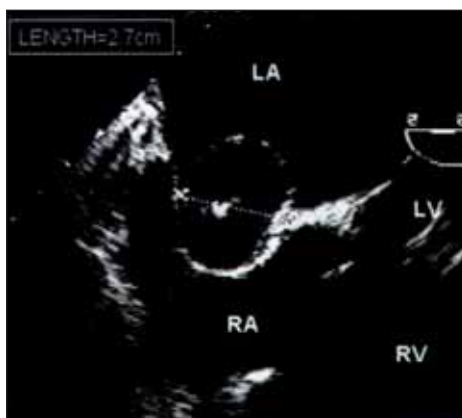


Figure 2: 4-chamber view TEE image during balloon sizing of the defect, the stop-flow diameter is 27mm.



Figure 3: Longitudinal TEE image with color after closure using a 26mm AMPLATZER Septal Occluder revealing good device position and no residual shunt.



Figure 4



Figure 5

Figures 4 & 5: Longitudinal TEE images without (Figure 4) and with color (Figure 5) four months after device closure, revealing good device position and no residual shunt. Note the change in the profile of the device.



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