International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2024: 7.101

Atrial Septal Defect (ASD) Device Closure: Case Summary

Dr Arulanandhan Ettiyan[1], Dr. Sureshkumar Ponnuswamy[2]

[1]DM Cardiology Resident, Department of Cardiology, Government Chengalpattu Medical College and Hospital, CHENGALPATTU
Email: *dr.arulanandhancyr[at]gmail.com*

[2]Assistant Professor, Department of Cardiology, Government Chengalpattu Medical College and Hospital, CHENGALPATTU
Email: *psureshkumar79[at]gmail.com*

Abstract: ***This case presents a compelling example of how advanced percutaneous techniques can be safely and effectively employed to manage large atrial septal defects in adult patients. A 26-year-old female with a diagnosed secundum ASD, measuring 26 mm and associated with mild pulmonary hypertension, reported with chest discomfort over several weeks. Despite having dilated right heart chambers, her hemodynamic parameters remained stable throughout evaluation and treatment. What stands out is the meticulous approach to diagnosis—utilizing TTE, TEE, and fluoroscopy—to guide the transcatheter device closure. The strategic choice of a 28 mm occluder, confirmed through imaging and pressure readings, reflects a high degree of procedural precision. It is evident that the multidisciplinary coordination and careful pre-procedural planning played a pivotal role in achieving an optimal outcome. This suggests that even sizable ASDs with rim limitations can be closed safely using percutaneous methods when performed in a structured, image-guided environment. From a broader clinical perspective, the success of this intervention reinforces the expanding boundaries of minimally invasive cardiology and underscores the importance of individualized patient assessment.***

Keywords: atrial septal defect, percutaneous closure, transthoracic echocardiography, hemodynamic stability, adult congenital heart disease

26-year-old Female

Known Case Of: Secundum Atrial Septal Defect (ASD)

Presentation: Referred with complaints of chest pain for the past 4 weeks. Pain was central, non-radiating, and not associated with sweating.

Clinical Examination:
Blood Pressure: 138/80 mmHg
Pulse Rate: 84 bpm
SpO_2: 99% on room air
Cardiac Rhythm: Sinus rhythm
General Status: Hemodynamically stable
ECG: Right axis deviation, no ST-T changes

Echocardiogram Findings (TTE/TEE):
Situs: Solitus
Apex: Levocardia
Shunt: Left to right
ASD Type: Secundum ASD
ASD Size: 26 mm (measured on TEE)

Rims:
Posterior-superior rim: 8.5 mm
Posterior-inferior rim: 5 mm
IVC rim: 5 mm
SVC rim: Adequate

RA/RV: Dilated
Pulmonary Artery Pressure: Mild pulmonary hypertension (PASP ~30 mmHg)
Tricuspid Regurgitation: Mild
Ejection Fraction: 58%
No evidence of: Clot, thrombus, vegetations
Interventricular Septum: Intact
Valves: Normal function
Procedure: Transcatheter ASD Device Closure
Date of Procedure: [Enter date if known]
Procedure Performed: Percutaneous closure of secundum ASD under fluoroscopic and transthoracic echocardiographic guidance.

Steps:
1. Pre-procedure Medications:
Heparin 8000 IU IV
Local xylocaine for anesthesia

2. Hemodynamics (Pre-deployment):
Left Atrial Pressure: 10 mmHg
Qp/Qs ratio: 7:1
Pulmonary Artery Pressure: 38/23 mmHg

3. Crossing the Defect:
ASD crossed using 0.035" Terumo wire
Wire parked in left upper pulmonary vein
Terumo wire exchanged with Amplatz Extra Stiff Exchange-Length Wire

4. Sheath and Delivery System:
8F Mullins sheath used
26 mm ASD device was selected based on measurements
Device loaded onto the delivery system and deployed under fluoroscopic and transthoracic echocardiography guidance

5. Device Positioning:
Position confirmed on TTE and fluoroscopy
28 mm device was released after stability and alignment confirmed
Post-Procedural Outcome:
Post-TTE Findings: Device well-positioned in situ, no residual shunt or ASD

Patient Status: Hemodynamically stable throughout the procedure

Cardiac Rhythm: Sinus rhythm maintained

Hemostasis: Achieved successfully

Conclusion

A successful percutaneous device closure of a large secundum ASD (26 mm) was performed using a 28 mm occluder device. The procedure was completed without complications. The patient remained stable and had no residual defect post-procedure.

References

[1] Mills NL, King TD. Nonoperative closure of left-to-right shunts. J Thorac Cardiovasc Surg 1976; 72:371-8. [PubMed] [Google Scholar]
[2] Du ZD, Hijazi ZM, Kleinman CS, et al. Comparison between transcatheter and surgical closure of secundum atrial septal defect in children and adults: results of a multicenter nonrandomized trial. J Am Coll Cardiol 2002; 39:1836-44. 10.1016/S0735-1097(02)01862-4 [DOI] [PubMed] [Google Scholar]
[3] Butera G, Romagnoli E, Carminati M, et al. Treatment of isolated secundum atrial septal defects: impact of age and defect morphology in 1,013 consecutive patients. Am Heart J 2008; 156:706-12. 10.1016/j.ahj.2008.06.008 [DOI] [PubMed] [Google Scholar]
[4] Baruteau AE, Hascoët S, Fraisse A. Transthoracic echocardiography is a safe alternative for assessment and guidance of transcatheter closure of secundum atrial septal defect in children. J Thorac Dis 2017; 9:1247-56. 10.21037/jtd.2017.04.47 [DOI] [PMC free article] [PubMed] [Google Scholar]
[5] Assaidi A, Sumian M, Mauri L, et al. Transcatheter closure of complex atrial septal defects is efficient under intracardiac echocardiographic guidance. Arch Cardiovasc Dis 2014; 107:646-53. 10.1016/j.acvd.2014.06.010 [DOI] [PubMed] [Google Scholar]
[6] Gonzalez-Barlatay F, Fournier A, Raboisson MJ, et al. Atrial Septal Defect Closure with Occlutech® ASD Fenestrated Device in a Child with Severe Pulmonary Hypertension. Pediatr Cardiol 2017; 38:202-5. 10.1007/s00246-016-1530-4 [DOI] [PubMed] [Google Scholar]
[7] Kammache I, Mancini J, Ovaert C, et al. Feasibility of transcatheter closure in unselected patients with secundum atrial septal defect, using amplatzer devices and a modified sizing balloon technique. Catheter Cardiovasc Interv 2011; 78:665-74. 10.1002/ccd.23077 [DOI] [PubMed] [Google Scholar]