



## Dislodged Interatrial Septum Occluder was Found in an Incredible Place: A Case Report

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**Abstract**

Secundum type atrial septal defect (ASD) is the most common type of interatrial septum defects. Transcatheter closure of secundum ASD has replaced traditional surgical ASD closure in most cases. Embolization of device is relatively uncommon (0.3%), but it can be a life-threatening situation that needs emergency open heart surgery. We presented a 44-year-old woman who underwent a successful ASD device closure, but the day after procedure, she presented with dyspnea and frequent paroxysmal supraventricular tachycardia with absence of device in interatrial septum (IAS) position. Further investigation by transesophageal revealed atrial septal occluder in the right pulmonary artery that extracted by surgery successfully.

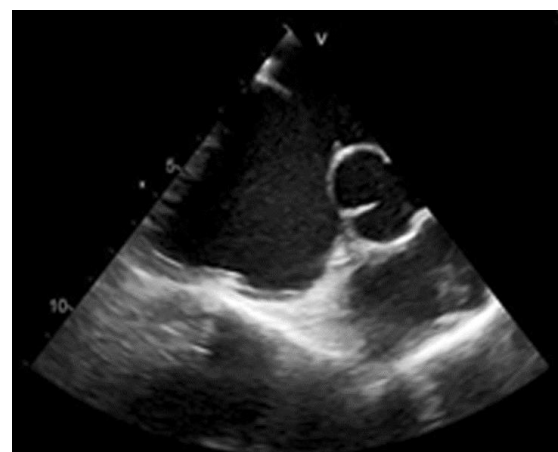
### INTRODUCTION

Secundum type atrial septal defect (ASD) is the most common type of interatrial septum defects, accounting for 75% of cases. Transcatheter closure of secundum ASD has replaced traditional surgical ASD closure in most cases. Embolization of device is relatively uncommon (0.3%) [1], but it can be a life threatening situation that needs emergency open heart surgery. Deficient rims (especially inferior vena cava (IVC) rim) is a challenge for ASD device closure. Transcatheter closure of secundum ASD with deficient rims (< 5mm) using the Amplatzer Septal Occluder (ASO) device (AGA Medical, Golden Valley, MN) is feasible [1]. We present a 44-year-old woman who underwent a successful ASD device closure, but the day after procedure, she presented with dyspnea and frequent paroxysmal supraventricular tachycardia. Transthoracic echocardiography showed absence of device in IAS position.

### CASE PRESENTATION

A 44-year-old woman was candidates for ASD device closure. Transesophageal echocardiography before the procedure revealed a large size secundum type ASD (2.5 × 2.7cm by 3D echocardiography). All rims were

sufficient (> 10mm) except for anterosuperior (3mm) and IVC (5mm) rims (Fig 1).



**Figure 1.** Pre-procedure Transesophageal Echocardiography, 45° mid-esophageal View Showed a Large Atrial Septal Defect

The patient underwent percutaneous closure of ASD with ASO. A 30mm device was chosen and deployed in proper position without residual shunt (Fig 2). The day

after the procedure, the patient had dyspnea and paroxysmal supraventricular tachycardia. Transthoracic echocardiography revealed embolized ASO and its position could not be shown precisely. Percutaneous device retrieval by snaring was attempted, but it was unsuccessful. The patient scheduled for open heart surgery. Pre-pump transesophageal echocardiography showed ASD without occluder device in its position. Further investigation revealed ASO in the right pulmonary artery (Fig 3) that extracted by our cardiac surgeon successfully (Fig 4).

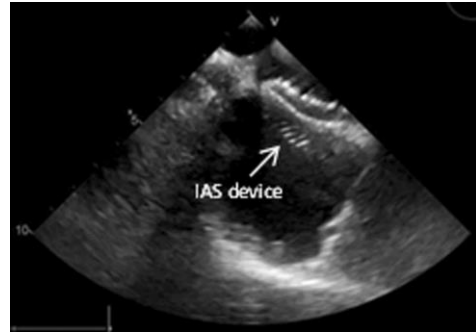


Figure 2. Early Post-procedural Transesophageal Echocardiography Showed IAS Occluder Device in its Proper Position. IAS: interatrial septum

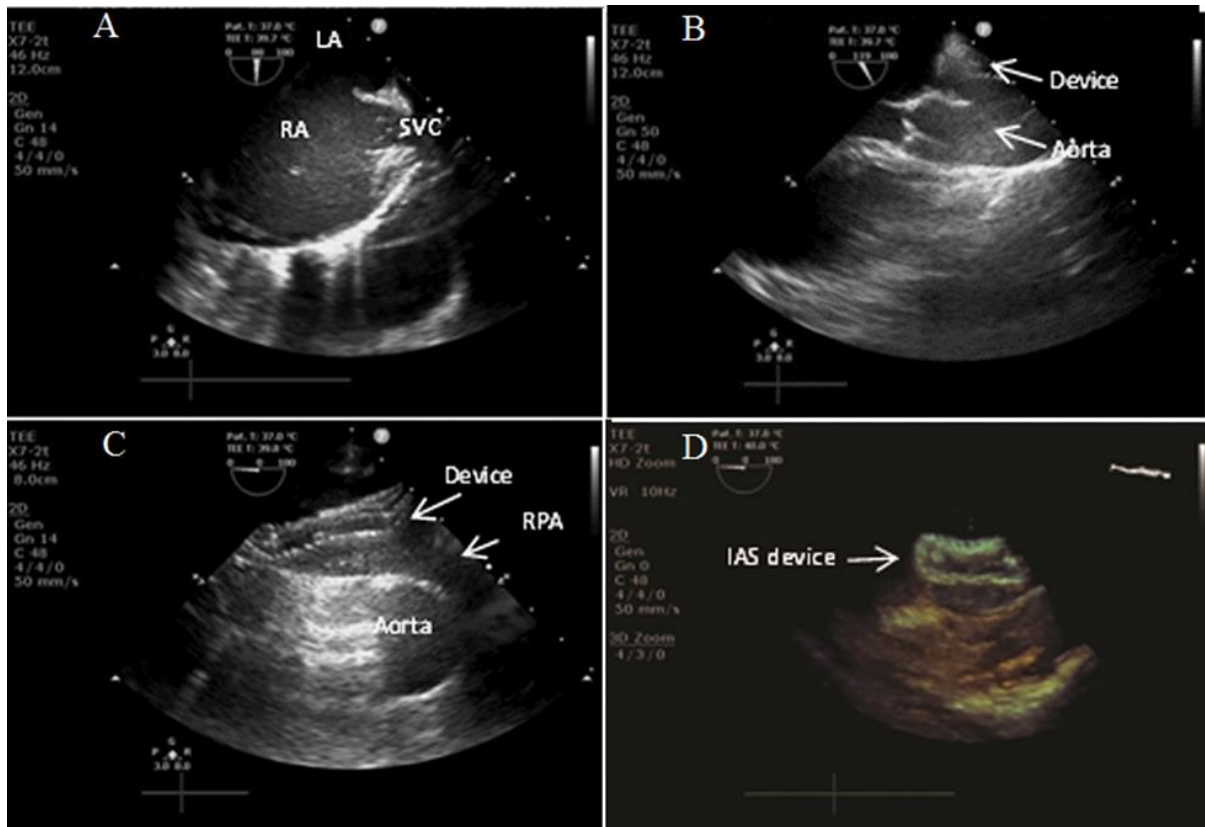


Figure 3. Pre-cardiac Surgery Transesophageal Echocardiography Showed Absence of Device in its Location and Migration to RPA: A) 90° Bicausal View: Absence of Device in its Location, B): 120° Midesophageal View: Device in RPA. C) 0° Upper Esophageal View: Device in RPA D) 3D, 0° Upper Esophageal View: Device in RPA. RPA: Right pulmonary artery; IAS: interatrial septum; LA: Left atrium; RA: Right atrium; SVC: superior vena cava.



Figure 4. Removed Interatrial Septum Occluder Device

## DISCUSSION

Transcatheter device closure of ASD is a safe procedure [2]. King and Mills, originally described and subsequently demonstrated feasibility of closing ASD using a device. In secundum type ASD, two important parameters, maximal ASD diameter and the surrounding rim dimensions, should be assessed before the procedure. Maximum defect size must be less than 38mm. Any rim is considered deficient if its length is less than 5 mm [3]. In Our patient, interatrial septum defect size (27×25mm) was suitable for device closure, but IVC rim size was borderline (about 5 mm) and it was the main reason for embolization.

Embolization and percutaneous retrieval of the ASO after release have been reported. In a survey of the ASO company-designated proctors, the incidence of device embolization was 0.55% (21 embolization in 3824 device placements). Most embolization cases occurred due to inadequate rim or undersized devices [4]. Of the 21 embolization, 15 of the devices were retrieved percutaneously with a snare without any complication and six were retrieved by surgery [4]. Although device embolization is inevitable, but in our case, migration to pulmonary artery was a rare event. Nobody thought that a large device might move to a remote place after traversing tricuspid and pulmonary valves.

## CONCLUSION

Because of the risk of embolization, all the operators should be prepared with the techniques and equipment required for percutaneous ASO retrieval, especially in borderline rims with high risk device embolization. In addition, we recommend complete exploring of all

cardiac chambers and great vessels by transesophageal echocardiography in all cases with device embolization.

## Disclosure

The authors declared no conflicts of interest.

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