International Surgery Journal
Lee SY. Int Surg J. 2023 Jun;10(6):1065-1067
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: https://dx.doi.org/10.18203/2349-2902.isj20231736

Case Report

Early embolization of atrial septal defect occluder device into the left atrium

Seock Yeol Lee*

Department of Thoracic and Cardiovascular Surgery, Soonchunhyang University Cheonan Hospital, Republic of Korea

Received: 30 March 2023
Accepted: 02 May 2023

***Correspondence:**
Dr. Seock Yeol Lee,
E-mail: csdoctor@korea.com

ABSTRACT

Atrial septal defect (ASD) is one of the most common types of congenital heart defects. Percutaneous closure of ASD is relatively safe and accepted as an alternative to surgery. However, device-related complications can occur rarely. Embolization of the Amplatzer atrial septal occluder (ASO) is one major complication of percutaneous device closure. The author presents a case of early embolization of ASO device into the left atrium, which removed the device surgically, and the ASD was closed.

Keywords: Atrial septal defect, Occluder, Embolization, Left atrium

INTRODUCTION

Percutaneous closure of the secundum type of atrial septal defect (ASD) has become a widely used alternative therapy to the surgical repair. It has been shown to be relatively safe, with rare complications and high success rate, and is becoming the standard treatment for secundum type ASD.[1] However, various procedure or device-related various complications can occur, and these complications are very serious and may require surgery. The author reports a case of early embolization of ASO device into the left atrium, which required emergent surgical removal and closure of ASD.

CASE REPORT

A 53-year-old female was transferred from cardiology department of my hospital for the treatment of severe dyspnea. She underwent a 22 mm Amplatzer ASO device (AGA Medical Co., Golden Valley, MN, USA) implantation 10 days ago for the percutaneous closure of a 1.7 cm-sized secundum-type ASD. Chest X-ray demonstrated cardiomegaly (Figure 1). Echocardiography showed device migration into the left atrium through recurrence of ASD (Figure 2). A floating device and intermittent obstruction of mitral flow were observed (Figure 3).

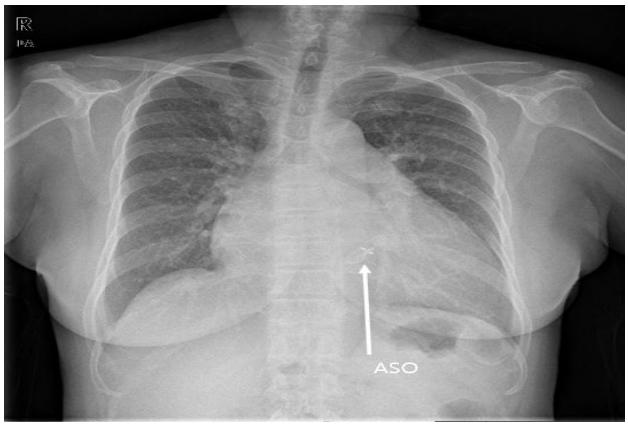

Figure 1: Chest X-ray demonstrate cardiomegaly and atrial septal occluder (ASO).

The patient underwent emergency surgery including median sternotomy and cardiopulmonary bypass. The heart was arrested, and the right atrium was opened. The

device was found in the left atrium through the ruptured ASD and retrieved through the atrial septal defect (Figure 4). The ruptured ASD was closed with an autologous pericardial patch. The patient's postoperative course was uneventful.

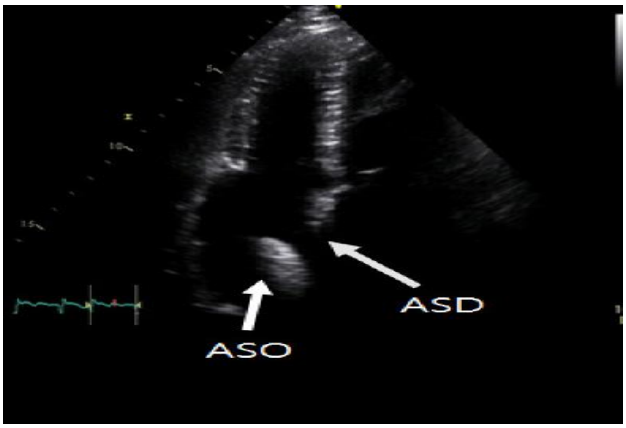

Figure 2: Echocardiography showing atrial septal defect (ASD), atrial septal occluder (ASO) and device migration into the left atrium.

Figure 3: Echocardiography showing a floating of atrial septal occluder (ASO) device and intermittent obstruction of mitral flow through mitral valve (MV).

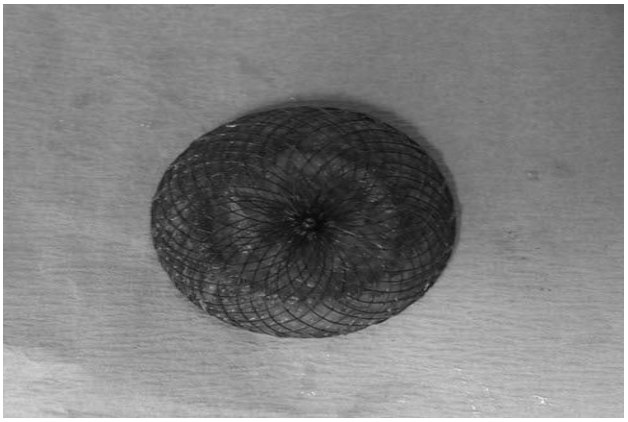

Figure 4: Picture showing retrived atrial septal occluder.

DISCUSSION

Percutaneous device closure of secundum-type ASD is becoming more common and has become an alternative to surgical treatment. It has the advantage of being a less invasive procedure, with earlier recovery, shorter hospital stay, and no visible scar. However, rare but fatal complications related to catheters can occur. The most common complication of this procedure is embolization and malposition of the device. Device embolization is a potential complication of every attempted ASD device closure.[1]

The incidence of occluder device embolization after ASD closure is 0.55-1.4%.[2] The common reasons for the device embolization include a very large defect, undersized ASD device, small left atrium to accommodate the device, inadequate margin of ASD, and technical issue.[3] Device embolization can occur within the first few days or even a few years after the intervention.[4] In my series, device embolization occurred after 10 days after the procedure.

The sites of embolization include right ventricle, right ventricle outflow tract, pulmonary artery, left atrium, and left ventricle out flow tract, arch of aorta, descending thoracic aorta, abdominal aorta, and common iliac artery.[5]

In the majority of the cases, the ASO device embolizes into the main pulmonary artery.[6] In my patient, inexperienced skills with percutaneous ASD closure are thought to be the main cause of device embolization. Some studied have reported the use of percutaneous method to retrieve embolized devices.[7] Although success has been reported in some cases, it is very difficult to retrieve an embolized or migrated ASO device using a percutaneous transcatheter approach, and surgery was suggested in most centers.[8]

CONCLUSION

Percutaneous closure of secundum-type of ASD can lead to serious complications. Therefore, proper selection of indication and experienced skills are important in reducing potential complications. In case of an embolization of ASO device, immediate treatment or surgery is required.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Lee SY. Early embolization of atrial septal defect occluder device into the left atrium. Int Surg J 2023;10:1065-7.