Tulip-like deformation of a nitinol septal occluder

Deformação em tulipa em oclusor septal de nitinol

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DOI: 10.31160/JOTCI202230A20220046

How to cite this article:

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Received on: Jan 6, 2022
Accepted on: Mar 4, 2022

Figure 1. (A) Transesophageal echocardiography image of 16-mm ASD diameter determined using a balloon and stop-flow sizing technique. (B) The 16-mm CeraFlex™ ASD Occluder showing the tulip shape of the left atrium disc after removal from the 12-F delivery catheter. Fluoroscopic images in two views. (C) Transesophageal echocardiography image.
A 47-year-old woman was referred for transcatheter closure of a secundum atrial septal defect (ASD). Vascular access was obtained via the right femoral vein and 16-mm ASD diameter was determined using balloon and the stop-flow sizing technique (Figure 1A).

During positioning of a CeraFlex™ ASD Occluder 16-mm device (Lifetech Scientific Co, Shenzhen, China), through a 12-F SteerEase™ sheath, the left atrial disc of the device adopted an abnormal tulip shape (Figures 1B and 1C).

The device was retracted into the delivery sheath and, in a second attempt to deploy it, the left atrial disc adopted the same shape. The device was pulled out of the delivery catheter and kept the abnormal shape. A CeraFlex™ ASD Occluder 18mm device was successfully implanted with no residual shunt.

CeraFlex™ is an alternative device to Amplatzer® septal occlude with some structural innovations, including increased device flexibility, and a delivery system that allows the device to be deployed with reduced tension. The CeraFlex™ device uses a proprietary titanium nitride coating technology that prevents over 90% of nickel release compared with uncoated occluders.¹

This is a rare and probably specific complication of the CeraFlex™ septal occluder device, previously called “tulip” deformation. This problem appears to occur when attempting to retrieve the intra-atrial disc, while it remains in contact with some part of the atrial septum or left atrial wall. This probably results in a stronger traction force and consequent modification of the nitinol mesh properties. Assuring complete intra-atrial position of the left atrial disc before retrieving it into the sheath is how one can avoid this complication.

**SOURCE OF FINANCING**

None.

**CONFLICTS OF INTEREST**

The authors declare there are no conflicts of interest.

**CONTRIBUTION OF AUTHORS**

Conception and design of the study: PC; data collection: APT and FMV; data interpretation: PC and DP; text writing: GLA and RCS; approval of the final version to be published: PC and GLA.

**REFERENCES**