LETTER TO THE EDITOR

Laceration of atrial septum during balloon sizing of atrial septal defect

We read with great interest the recently published case report by Alsaileek et al. in the European Journal of Echocardiography on laceration of atrial septum during balloon sizing. We had already reported about tear of atrial septum during balloon sizing of atrial septal defect (ASD) in a 20-year-old female. Balloon sizing was attempted with Amplatzer sizing balloon (Amplatzer sizing Balloon, AGA medical corporation, 682 Mendelssohn Avenue, Golden Valley, MN-55427) (length, 24 mm; maximum volume, 30 ml). At partial inflation a good indentation was obtained which slowly disappeared without further increase in the balloon volume. Trans-thoracic echocardiography (TTE) followed by trans-esophageal echocardiography (TEE) revealed a tear in the inferior margin of the septal defect. The patient was referred for surgical closure where a tear in the inferior rim of the ASD was found which extended down the septum up to the opening of inferior vena cava, with a small hematoma. Patient underwent repair of the tear and pericardial patch closure of the defect.

In our patient we suspected the tear because the waist disappeared over time, which was confirmed by TTE. In the case reported in this journal echogenic shadows were noted at atrial septum during the procedure which was confirmed as laceration at surgery. This laceration involved the superior and posterior aspects of the atrial septum, while our patient the tear extended from the inferior rim of the defect.

Alsaileek et al. used Meditech™ balloon for sizing the defect employing the pull-through technique. It is not clear whether Alsaileek et al. used a fluoroscopy-guided or TEE-guided technique for ASD sizing. The procedure in our case was fluoroscopy-guided where the loss of indentation of the sizing balloon on further inflation could be readily identified.

As the pull-through technique depends largely on the anatomy of the septum and the tension applied, it is reported to be unreliable. Presently we use static balloon technique using Amplatzer™ sizing balloon. When compliant balloons like Amplatzer™ are used, the common practice is to inflate the balloon to its recommended capacity and measure the waist. This will avoid the problem of under sizing the ASD, as the floppy rims are also included. Another school of thought is that the waist obtained on partial inflation is sufficient and further inflation of the compliant balloon will not give any additional information.

Since there is a chance for laceration of the atrial septum with sizing balloons, operators have to be cautious during the procedure. In both cases the tear occurred with minimal force applied on the septum. So operators should be careful not to apply too much tension on the septum with the Meditech system (while pulling the balloon) or not to over-inflate the sizing balloon in the case of Amplatzer system.

It is reported that sizing an ASD by inflating a compliant balloon just until shunting is eliminated, and not until a waist is visible, results in less overstretching of the ASD and selection of a smaller Atrial septal occluder device, achieving similar closure rates and potentially fewer complications. This modification of sizing will probably eliminate the chance of a laceration.

References

1. Alsaileek Ahmed A, Omran Ahmad, Godman Michael, Najm Hani K. Echocardiographic visualization of laceration of


S. Sivasankaran
S. Harikrishnan*
Namboodiri Narayanan
Tharakan Jaganmohan
Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram 695011, India
*Corresponding author. Tel.: +91 471 2551692.
E-mail addresses: drharikrishnan@gmail.com, drharikrishnan@hotmail.com (S. Harikrishnan)

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