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Commentary: Less-invasive atrial septal defect closure can become more invasive

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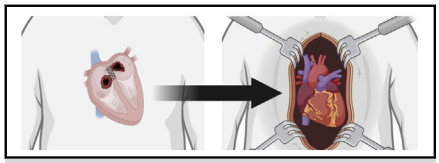

Less-invasive devices can cause complications that require further invasive procedures.

CENTRAL MESSAGE

Less-invasive devices can cause life-threatening complications that require further invasive procedures.

Percutaneous closure of atrial septal defects (ASDs) was pioneered by King and colleagues using a device made from 2 interlocking umbrellas in 1975.[1] Since then, an intensive research and development effort has resulted in a wide range of ASD closure device designs. The Amplatzer Septal Occluder (Abbott. Abbott Park, Ill) is a self-expanding and self-centering nitinol mesh device that was introduced in 1995.[2] This device consists of 2 discs connected by a waist that sits in the ASD.

In this issue of *JTCVS Techniques*, Kitamura and colleagues[3] report the case of a 20-year-old man with atopic dermatitis who developed methicillin-sensitive *Staphylococcus aureus* infective endocarditis involving an Amplatzer Septal Occluder that had been implanted 3 years previously. The infection involved poorly epithelialized areas of the device on both the left atrial side and the right atrial side. Following surgical removal of the septal occluder device and debridement of the infected tissue, large defects in the left and right atrial walls and the atrial septum were reconstructed with bovine pericardial patches. This resulted in a good outcome. The authors concluded that primary surgical ASD closure could be indicated in patients with risk factors for infective endocarditis, such as atopic dermatitis.

Surgical ASD closure is indeed superior to percutaneous device closure with regards to reinterventions. A retrospective population-based cohort study of patients aged 18 to 75 years showed that the long-term reintervention rates were significantly greater in patients with percutaneous ASD closure than in patients with surgical ASD closure (7.9% vs 0.3% at 5 years, $P < .01$).[4] It is likely that further progress in device design will improve outcomes of percutaneous ASD closure. However, at this time the Amplatzer nitinol mesh devices and the Gore expanded polyterafluoroethylene membrane devices (W. L. Gore & Associates, Inc, Flagstaff, Ariz) are the only devices approved for ASD closure by the US Food and Drug Administration in the United States.[5] Until improved designs become available, it is important to select patients for percutaneous ASD closure as suggested by Kitamura and colleagues.[3] Otherwise, these less-invasive percutaneous devices risk complications that require further invasive procedures.

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